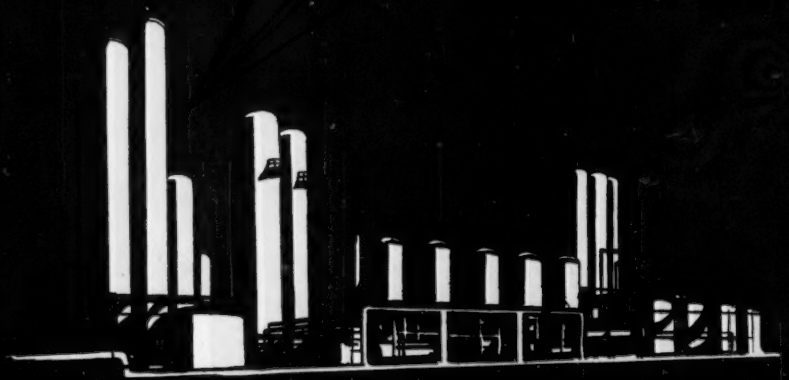
Chemical Engineering

MID-OCTOBER 1955

1955 INVENTORY ISSUE



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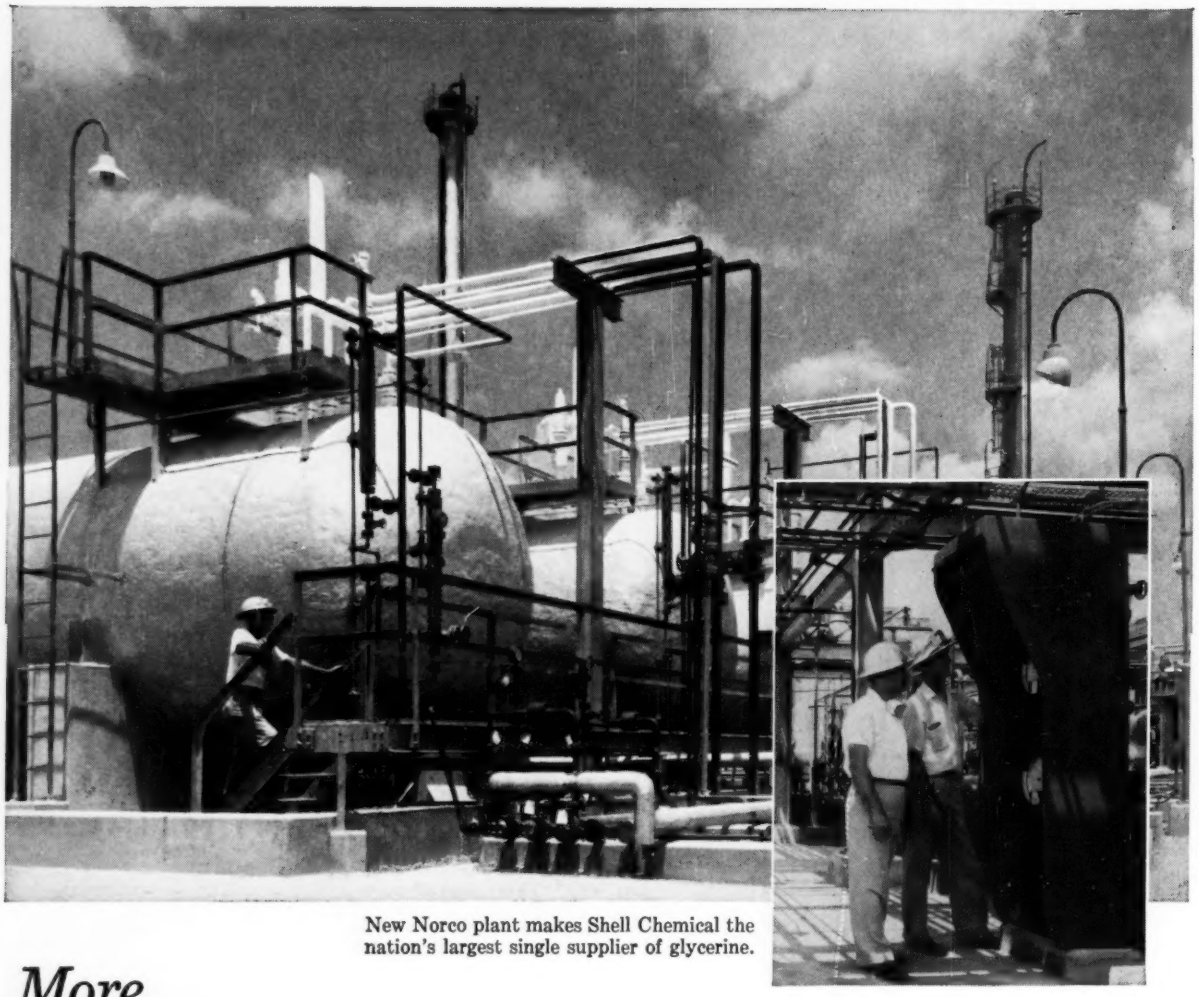

New Norco plant makes Shell Chemical the nation's largest single supplier of glycerine.

More Glycerine *on stream!*

Seven years ago, Shell Chemical startled industry with this news . . . high-purity *synthetic* glycerine, produced from petroleum, in commercial quantities!

Now . . . more good news for glycerine buyers! A new plant (Norco, Louisiana) is now on stream, adding further to the supply of uniform, high-purity glycerine.

And looking toward the future, Shell Chemical is building a plant for *an entirely new synthetic glycerine process,* using hydrogen peroxide and acrolein as raw materials.

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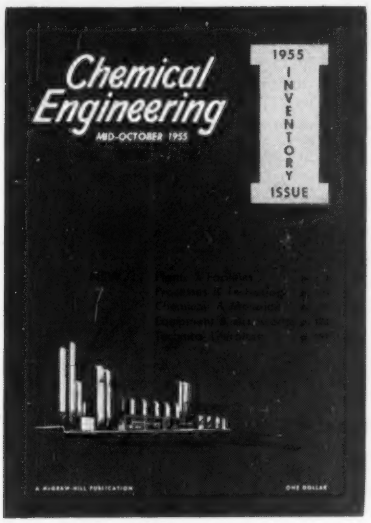
JOHN R. CALLAHAM, EDITOR



A Permanent Reference

Here is CE's Annual Inventory Issue. The special 13th issue that's published yearly. It's a timely–yet permanent– type of reference service for chemical engineers, an innovation in the entire chemical publishing field.

All material, of course, has been digested to its factual core. And all listings have been carefully screened for their interest and value to the practical engineer in industry.

You'll see several format changes this year. They're largely improvements and refinements passed along by readers and by some 6,200 CE subscribers selected for special opinion surveys.

Most of our subscribers–nearly 40,000 strong now–should have many occasions to use this issue during the coming year. They will again find it a volume to be saved for the future as a permanent reference. For each year's inventory issue will continue to supplement–rather than duplicate– the information in previous Annual Inventory Issues.–JRC

• • • **Inventory Issue again makes round-up of new developments for past year.**

In some 225 pages, we present an inventory-of important developments during the past fiscal year in new chemical plant construction, process and technology advances, new industrial chemicals and raw materials, new equipment, technical literature from manufacturers.

This special 13th issue—CE's Annual Inventory Issue—is a timely, yet permanent, reference for chemical engineers.

Who's building what, and where?

Our tally of new plants and facilities shows some 443 chemical construction projects announced, planned, under construction or completed during the past fiscal year. Here's the status of each (p. 47).

What's new in processes, technology?

Plenty, for our inventory of new processes and technology advances comes up with 367 developments that have made news

Please turn page

GUIDED TOUR

Chemical Engineering

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within the past 24 months. Here's a pared-to-the-bone rundown on each (p. 33).

New chemicals you should know about.

Over 201 of them, in fact—all new or improved chemicals or raw materials carefully screened for their value to chemical engineers in industry. Want to know them better? CE's inventory makes it easy to get more information (p. 77).

Can't keep up with new equipment?

Most engineers find it tough, what with all that's happening. Our inventory of new equipment developments of the past year brings you a terse digest of 366 developments—all organized for quick-as-a-trigger reference (p. 123).

Building up your technical files?

Want to build up your files and keep them up to date? Our comprehensive inventory of current technical literature will help you do just that. And they're all yours—free—for the asking (p. 197).

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To keep pace with the chemical, petrochemical and chemical process industries, more engineers subscribe to Chemical Engineering than to any other publication.

Total net paid circulation of this issue:

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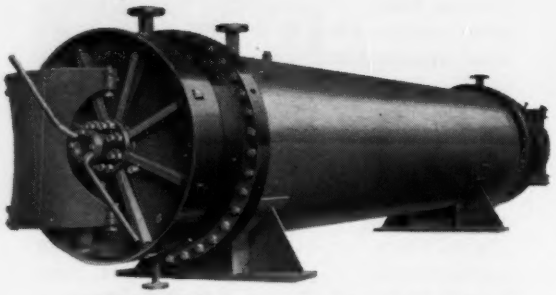
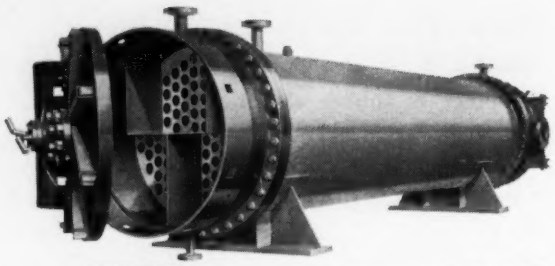
Heat Exchangers Open in 5 Seconds

with new p-k Lever-Lock Door*

Substantial savings seen for processors of high-fouling liquids and others who must clean and inspect heat exchangers regularly.



CLOSED, the Lever-Lock looks like this. A single 1/6th turn of the lever draws back the lock bars.



OPENED manually with an easy pull, the tubes and tube sheet are easily accessible.

Anyone who has had to open a heat exchanger knows how time-consuming and costly it can be. Dozens of bolts must be loosened. Specialized labor is often required.

Now these problems can be things of the past. **p-k**'s Lever-Lock Door, available on **p-k** heat exchangers, provides *five-second access* to the unit—and a new approach to exchanger design. The door "unlocks" with a 60° manual turn of a lever. In horizontal position the door then swings open easily. In vertical position, it is lifted by means of a pneumatic cylinder. Either way, it seats itself automatically on a long-life, self-sealing gasket. Other features allow Lever-Lock to be used in a wide range of applications:

- **Available in all alloys**
- **Pressure range from full vacuum to 300 psi**
- **Temperatures to 400°F. (Special alloys for sub-zero applications)**
- **Mechanical lock available to prevent opening vessel when pressurized**
- **No maintenance other than simple lubrication**
- **Available in diameters from 16" through 36"**

Lever-Lock doors have been used successfully not only on **p-k** heat exchangers, but on **p-k** autoclaves and sterilizers in the chemical, textile, food processing, and rubber manufacturing industries as well. For all of them, and wherever exchangers carry high-fouling liquids or require frequent entry for cleaning and inspection, Lever-Lock doors pay for themselves through savings in time. Heat transfer can be more efficient, too, since you can afford to remove gunk more frequently.

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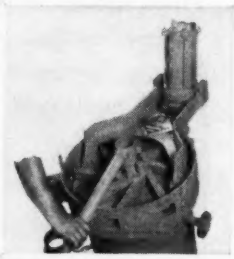
*Pat. Pending

1. This autoclave is in vertical position with its Lever-Lock Door equipped with a pneumatic cylinder.



2. To open, operator merely gives lever a 1/6th turn that releases lock bars.

3. Door is lifted in 5 seconds—automatically! An hour or more of work is saved.

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1955 INVENTORY

NEW...

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433 LISTINGS . . . CE's comprehensive inventory of major new plants and facilities . . . who's building what, and where . . . which way the chemical process industries are moving . . . future markets for equipment, raw materials . . . future sources for products.

THIS is CE's exclusive sixth annual inventory of major new plants and facilities in the chemical process industries. It lists 443 major projects that were announced, planned, under construction or completed during the last six months of 1954 and the first six months of 1955. To insure completeness and accuracy, this list was checked by leading companies and by CE's own field editors. Minor projects and those costing less than $200,000 are not included.

1955 INVENTORY

New Plants and Facilities

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• Fertilizers & Fertilizer Chemicals

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Allied Chemical & Dye (Nitrogen)	Hopewell, Va	Ammonia and end products	$8,000,000	Expansion. In operation March '55.
Allied Chemical & Dye (Nitrogen)	Omaha, Neb	Ammonia, urea, nitrophosphates	25,000,000	On stream Aug. '54. Plans to double capacity—awaiting availability of natural gas. Originally designed for 75,000 tons per year ammonia (90% as urea). 200,000 tons per year nitrophosphates.
Allied Chemical & Dye (Nitrogen)	South Point, Ohio	Ammonia, urea	4,000,000	Expanded ammonia facilities completed June '55 (capacity upped by 20,000 tons per year). Expanded urea facilities completed Dec. '54 (capacity doubled).
Atlantic Refining	Philadelphia, Pa	Ammonia		In operation. 100 tons per day. Hydrogen from catalytic reformer effluent. Operates at 2,500 psi. rather than usual 4,000 psi.
Brea Chemicals	Brea, Calif	Ammonium phosphate soln		On stream Sept. '54. 25,000 tons solution per year.
Brea Chemicals	Browley, Calif	Ammonium phosphate soln		Planned. 25,000 tons per year.
Brea Chemicals	Fresno, Calif	Ammonium phosphate soln		On stream April '55. 25,000 tons solution per year.
Brea Chemicals	Brea, Calif	Ammonium nitrate	2,500,000	On stream Aug. '55. 50,000 tons per year.
California Spray-Chemical	Richmond, Calif	Fertilizers		Under construction. Pelleted and liquid. To take ammonia from Standard Oil of California's new 300 ton per day ammonia plant at Richmond, Calif.
Calumet Nitrogen Products	Hammond, Ind	Anhydrous ammonia, nitrogen solutions		Under construction. Will use byproduct hydrogen from refinery. 300 tons per day ammonia—about 100 tons per day to be converted to nitrogen solutions. Complete May '56.
Celanese	Baton Rouge, La	Ammonia	10,000,000	Increase capacity from 150,000 to 200,000 tons per year.
Chillicothe Chemical Mfg		Ammonia, urea	17,000,000	180 tons ammonia, 160 tons urea per day. Operate late '55, or early '56.
Columbia River Chemicals	Attalia, Wash	Anhydrous ammonia, urea, ammonium sulfate	12,000,000	160, 110, and 140 tons per day respectively. Use oil for hydrogen production. Preliminary site development started.
Columbia-Southern Chemical	Natrium, W. Va	Ammonia	3,000,000	Started production first quarter '55. 80 tons per day.
Consolidated Mining & Smelting	St. Helens, Ore	Ammonia, urea	20,000,000	Option on land.
Cooperative Farm Chemicals Assn.	Lawrence, Kan	Ammonium nitrate, ammonia, nitric acid	15,000,000	On stream. 330 tons per day of prilled ammonium nitrate and nitrogen solutions.

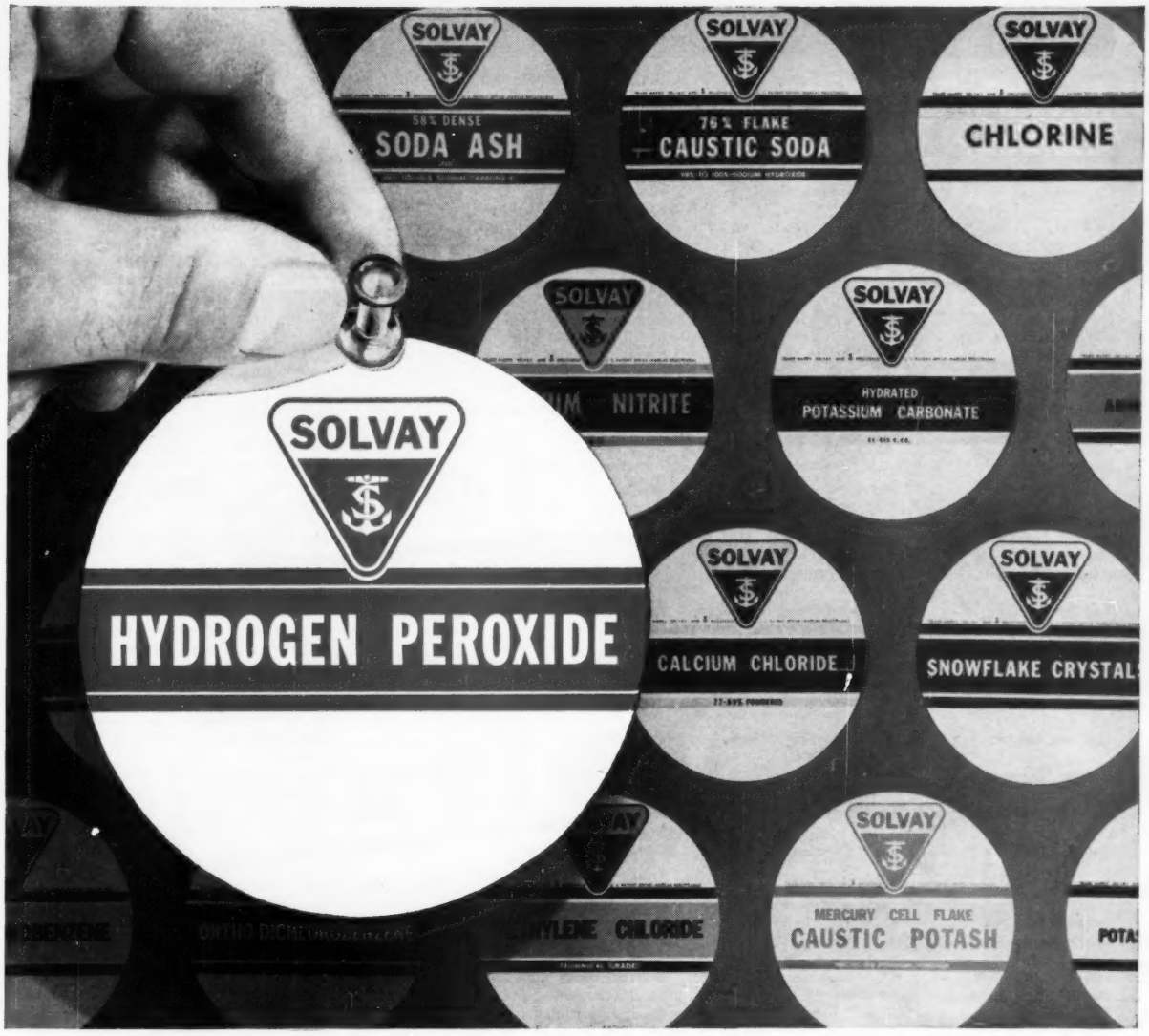
FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Deere Chemicals (Deere & Co.)	Pryor, Okla.	Ammonia, urea	18,000,000	In operation. 180 and 200 tons per day respectively. Pechiney process.
Dow	Freeport, Tex.	Ammonia	3,600,000	Expansion completed. Production rate doubled.
Escambia Bay Chemical	Pensacola, Fla.	Anhydrous ammonia, nitric acid, ammonium nitrate, ammonium nitrate-ammonia solutions	25,000,000	Under construction. To operate Jan. '56. Raw material—natural gas. 250, 220, 275–300, 200 tons per day respectively.
Farmers Chemical Resources Development	Carlsbad, N. M.	Potash	13,000,000	Under construction.
Food Machinery & Chemical (Westvaco)	South Charleston, W. Va.	Anhydrous ammonia	2,500,000	To operate this fall. 60 tons per day.
Grace Chemical	Woodstock, Tenn.	Anhydrous ammonia, urea	20,000,000	Ammonia on stream Dec. '54 (250 tons per day). Urea on stream May '55 (150 tons per day). Pechiney process.
Grange League Federation	Big Flats, N. Y.	Fertilizer	800,000	Under construction. 300,000 tons per year. Start production early '56.
Green Belt Chemical	Northern Ohio	Fertilizers	.....	Plan to build plant.
Gulf Chemical	Pensacola, Fla.	Anhydrous ammonia, nitric acid, ammonium nitrate, polyvinyl chloride	23,000,000	Scheduled to operate by early '56. To make 200 tons per day anhydrous ammonia (partly converted to nitric acid and ammonium nitrate) and 40 tons per day polyvinyl chloride.
International Minerals & Chemical	Carlsbad, N. M.	Potassium sulfate	1,000,000	Increased capacity by 40,000 tons per year to 150,000 tons per year.
International Minerals & Chemical	Niagara Falls, N. Y.	Chlorine, liquid caustic potash, potassium carbonate	2,000,000	Expansion program completed. Chlorine capacity is up 25% to 25 tons per day, and capacity for other two has been doubled.
Jefferson Lake Sulphur	Southeastern Idaho	Triple superphosphate, sulfuric acid	3,000,000	Scheduled to operate by end of '55. 80,000 tons per year each product.
Ketona Chemicals	Tarrant, Ala.	Ammonia, nitrogen solutions	.....	Under construction. To operate late '55. 45,000 tons per year ammonia. First U. S. synthetic ammonia plant based entirely on coke oven gas.
Lion Oil	Luling, La.	Ammonia, ammonium nitrate, ammoniating solutions, carbon dioxide	31,000,000	In operation late '54. 1,200,000 lb. per day ammonia and nitrate.
Mississippi Chemical	Yazoo City, Miss.	Ammonia	5,000,000	From 120 to 290 tons per day.
National Distillers Products	Tuscola, Ill.	Ammonia	7,000,000	In operation early '55. 50,000 tons per year.
National Potash	Carlsbad, N. M.	Potash	19,000,000	New company formed by Freeport Sulphur and Pittsburgh Consolidation Coal. 250,000 tons per year (oxide). Production due in '57.
Northern Chemical Industries	Searsport, Me.	Anhydrous ammonia, nitrogen solutions	9,000,000	Under construction. To complete March '56. 43,000 tons per year of ammonia. First U. S. plant to use Bunker C fuel oil as raw material in Texaco partial oxidation process.
Pennsalt	Portland, Ore.	Anhydrous ammonia	.....	In operation May '55. 15 tons per day.
Phillips Pacific Chemical	Pasco, Wash.	Anhydrous ammonia	12,000,000	New company formed by Phillips Petroleum and Pacific Northwest Pipeline. 200 tons per day. Production due late '56.
Phillips Petroleum (Curry Chemical)	Scottsbluff, Neb.	Liquid mixed fertilizers	.....	40 ton per day plant completed.
Rohm & Haas	Deer Park, Tex.	Ammonium sulfate	1,300,000	In operation.
St. Paul Ammonia Products	Pine Bend, Minn.	Anhydrous ammonia, nitrates, nitrogen solutions	15,000,000	To operate April '56. 200 tons per day of all products.
Shell Chemical	Ventura, Calif.	Urea	10,000,000	150 tons per day. Montecatini process. Operate late '56.
Southwest Agrochemical	Phoenix, Ariz.	Ammonia	2,500,000	50 tons per day. To operate early '57.
Spencer Chemical	Henderson, Ky.	Nitric acid, ammoniating solutions	1,600,000	Expansion scheduled complete July '55.
Spencer Chemical	Vicksburg, Miss.	Nitric acid, ammoniating solutions	1,500,000	To complete expansion spring '56.
Standard Oil (Calif.)	Richmond, Calif.	Ammonia, nitric acid	16,000,000	To operate mid '56. 300 tons per day ammonia. To use byproduct hydrogen from nearby refineries.
Standard Oil (Ohio)	Lima, Ohio	Ammonia, urea, nitric acid, nitrogen solutions	17,000,000	300, 125, 60, 200 tons per day respectively. Complete late '55. Inventa process.
Stauffer Chemical	Vernon, Calif.	Mixed fertilizers	750,000	Under construction. Complete Dec. '55.
Sun Oil	Marcus Hook, Pa.	Anhydrous ammonia	9,000,000	Complete late '55. 300 tons per day.
Thunderbird Chemicals	Kyrene, Ariz.	Anhydrous ammonia, ammonium sulfate, ammonium phosphate, urea, fertilizer solutions, sulfuric acid	13,000,000	Complete fall '56. 120, 150, 50, 45, 30, and 170 tons per day respectively. Part of sulfuric acid to be used in manufacture of phosphate from western phosphate rock by wet process.
U. S. Steel	Geneva, Utah	Ammonia, ammonium nitrate	18,500,000	Complete mid '56. 76,000 tons per year. Use coke oven gas.
Western Phosphates	Garfield, Utah	Phosphoric acid, triple superphosphate, ammonium phosphate	2,250,000	Second concentrator added to phosphoric acid line in March '55 to eliminate bottleneck. Further expansion underway to increase triple superphosphate and ammonium phosphate capacity 50% by fall '56. Will take ammonia from U. S. Steel's Geneva plant.

• Fine Organics

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Andover Co.	Spartanburg, S. C.	Naphthol dyes	.....	Production now in full swing.
Atlas Powder	Memphis, Tenn.	Food emulsifiers	$1,250,000	In production. Use sorbitol rather than glycerine.
Charmin Paper Mill	Appleton, Wis.	Torula yeast	2,865,000	Raw material is spent sulfite liquor. 5,500 tons yeast per year. Full operation spring '55.
Du Pont	Beaumont, Tex.	Methionine	4,000,000	New plant began operations Oct. '54.
Great Western Sugar	Johnstown, Colo.	Monosodium glutamate	2,500,000	From beet sugar residue. In production Dec. '55.
Jefferson Chemical	Port Neches, Tex.	Morpholine	.....	On stream summer '54. 2–3 million lb. per year.
Lanpar	Dallas, Tex.	Ethical pharmaceuticals	.....	In operation summer '54. 2 million tablets per day.
National Chlorophyll & Chemical	Lamar, Colo.	Chlorophyll, karotene, xanthophyll	1,000,000	20,000 lb. per day dehydrated cereal plant in operation April '55. Production of chlorophyll, karotene and xanthophyll started Aug. '55.
Sanders Chemical	Philadelphia, Pa.	Potassium acid saccharate and derivatives	.....	Plant addition completed.
Sherwin-Williams	Chicago, Ill.	Phthalocyanine pigments	1,000,000	Planned.
Stepan Chemical	Joliet, Ill.	Dimethyl sulfoxide	250,000	1–2 million lb. per year semi-works. To operate early '56.

• Heavy Organics

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Air Reduction	Calvert City, Ky.	Vinyl acetate	$3,000,000	Under construction. Complete early '56. 30 million lb. per year.
Allied Chemical & Dye (Barrett)	Frankford, Pa.	Phthalic anhydride	.....	In operation March '55. Expansion doubles capacity.
Allied Chemical & Dye (General Chemical)	Baton Rouge, La.	Refrigerants	.....	Doubled capacity for CCl_2F_2 and CCl_3F. Also added facilities for $CHClF_2$ and $C_2Cl_3F_3$.
Allied Chemical & Dye (General Chemical)	Danville, Ill.	Refrigerants	.....	New plant scheduled to produce Aug. '55.
Allied Chemical & Dye (National Aniline)	Hopewell, Va.	Adipic acid	.....	Construction completed.
Allied Chemical & Dye (National Aniline)	Hopewell, Va.	Caprolactam monomer	25,000,000	Started production Feb. '55. 20 million lb. per year.
Allied Chemical & Dye (National Aniline)	Moundsville, W. Va.	Diisocyanates	Multi-million	Under construction. Complete '56.
Allied Chemical & Dye (National Aniline)	Moundsville, W. Va.	Maleic anhydride, fumaric acid	4,500,000	In operation July '54. Annual capacity 10 million lb. maleic, 1 million lb. fumaric. Catalytic oxidation of benzene.
Allied Chemical & Dye (National Aniline)	Moundsville, W. Va.	Aniline, nitrobenzene	3,200,000	Will double capacity. Complete '55.
Allied Chemical & Dye (Nitrogen)	Orange, Tex.	Ethanolamines	.....	In operation Jan. '55.
Allied Chemical & Dye (Nitrogen)	South Point, Ohio	Formaldehyde	2,300,000	In operation Jan. '55. Capacity increased 2½ times. Oxidation of methanol.
Allied Chemical & Dye (Semet-Solvay)	Buffalo, N. Y.	Crude butadiene, propylene	.....	Expansion completed to 1,500 tons per year crude (40–50%) butadiene byproduct, plus propylene.
Allied Chemical & Dye (Semet-Solvay)	Ironton, Ohio	Coke oven	.....	New 24 oven battery put in operation early '55.
Allied Chemical & Dye (Solvay)	Moundsville, W Va.	Chloromethanes	.....	In operation Oct. '54.
American Cyanamid	Avondale, La.	Acetylene	.....	On stream late '54. 60 tons per day. Partial oxidation process.
American Cyanamid	Calvert City, Ky.	Acrylonitrile	.....	Completed summer '54.
American Cyanamid	Fortier, La.	Methyl styrene	8,000,000	Under construction. Complete mid '56. 40 million lb. per year.
American Cyanamid	Pryor, Okla.	Nitroguanidine	21,000,000	Planned. First large-scale plant in U. S. Artillery shell propellant.
American Gilsonite	Fruita, Colo.	Coke, gasoline	10,000,000	Convert gilsonite to high-grade coke and top quality gasoline. Operate late '56.
Archer-Daniels-Midland	Ashtabula, Ohio	Fatty alcohols	5,000,000	On stream June '55. 10,000 tons per year. Glycerine and caustic soda byproducts.
Arizona Chemical	Panama City, Fla.	Tall oil rosin and fatty acids	.....	On stream June '55. Largest tall oil fractionating unit. Increases capacity 2½ times.
Celanese	Pampa, Tex.	Vinyl acetate, methyl ethyl ketone	.....	Capacity for vinyl acetate doubled spring '55. Facilities for MEK being installed.
Commercial Solvents	Sterlington, La.	Nitroparaffins	5,000,000	To go on stream late summer '55. To also enlarge nitroparaffin unit at Peoria, Ill.
Cotarco, Inc	Colorado	Coal carbonization	11,500,000	Planned. Process 8,520 tons per day coal. New low-temperature process. Char, fuel gas, acid oil, light oil, creosote oil, pitch, sulfur.
Crown Zellerbach	Camas, Wash.	Dimethyl sulfide	.....	2 million lb. per year semi-works construction started July '55.
Dow	Freeport, Tex.	Perchloroethylene	.....	New unit on stream late '54.
Dow	Midland, Mich.	Bisphenol A	.....	Doubled capacity summer '54. Mostly for epoxy resins.
Dow	Velasco, Tex.	Glycerine	5,500,000	Due complete Sept. '55. 36 million lb. per year. Use LPG and brine.



A NEW Solvay Product

Solvay Hydrogen Peroxide, the latest addition to Solvay's line of alkalies and industrial chemicals, is being produced in a new plant at Syracuse, New York. This new plant, which represents the latest advances in chemical engineering, is designed to assure hydrogen peroxide users a product of highest quality–Solvay quality.

Solvay Hydrogen Peroxide will be produced in both 35% and 50% grades, and will be shipped in both drums and tank cars. It will be available in straight or mixed carloads or truckloads, as well as in less carload quantities. We invite your inquiries about prices and general information.

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Soda Ash • Hydrogen Peroxide • Snowflake® Crystals • Chloroform
Ammonium Bicarbonate • Cleaning Compounds • Caustic Potash
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Methylene Chloride • Monochlorobenzene • Para-dichlorobenzene
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SOLVAY PROCESS DIVISION
ALLIED CHEMICAL & DYE CORPORATION
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Allied Chemical

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Inquiry Code Number for this advertisement-11

HEAVY ORGANICS, continued

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Du Pont	Antioch, Calif	Fluorinated hydrocarbon refrigerants, tetraethyl lead	.....	Start construction of new plant Aug. '55. To complete late '56.
Du Pont	Louisville, Ky	Monochlorodifluoromethane refrigerant	.....	Due on stream late summer '55.
Ethyl Corp	Baton Rouge, La	Ethyl chloride	4,000,000	Certificate of necessity granted.
Food Machinery & Chemical (Ohio-Apex)	Nitro, W. Va	Diallyl phthalate prepolymer	.....	Under construction.
Foster-Grant	Baton Rouge, La	Styrene	.....	Plan doubling capacity to 50 million lb. per year.
General Aniline & Film	Calvert City, Ky	Acetylene derivatives	6,000,000	Due on stream end '55.
B. F. Goodrich	Calvert City, Ky	Acrylonitrile	8,500,000	Complete summer '55. 24 million lb. per year.
Gulf Oil	Port Arthur, Tex	Ethylene	18-20,000,000	3 billion cu. ft. per year. Second unit in operation July '55.
Halby Chemical	Wilmington, Del	Ammonium thiocyanate	.....	Equipment installed late '54 to make crystalline product.
Hart Products	Jersey City, N. J.	Surfactants	100,000	Plant expanded early '55.
Hercules Powder	Burlington, N. J.	Dimethyl terephthalate	4,000,000	New plant completed June '55. 12 million lb. per year. First plant to use air oxidation process. To supply C.I.L.'s Terylene plant at Millhaven, Ont.
Hercules Powder	Burlington, N. J.	Hydroabietyl alcohol	.....	Capacity doubled. Made from partially hydrogenated rosin.
Hercules Powder	Franklin, Va	Tall oil rosin and fatty acids	.....	New plant under construction. Complete early '56. 33,000 tons per year crude oil.
Hercules Powder	Gibbstown, N. J.	Para-cresol	.....	Planned. 4 million lb. per year. Second product to be made commercially by Hercules Distillers Co. cumene-type oxidation-cleavage process.
Hercules Powder	Gibbstown, N. J.	Phenol, acetone	9,000,000	On stream Feb. '55. 26 million lb. per year phenol, 15 ditto acetone. Also alpha-methyl-styrene, acetophenone, hydroperoxides.
Hercules Powder	Mansfield, Mass	Pentaerythritol	.....	Capacity increased from 18 to 24 million lb. per year.
Heyden Chemical	.....	Pentaerythritol	4,000,000	Will build another plant. To operate end '56. 25 million lb. per year.
Hidalgo Chemical	Brownsville, Tex	Alcohols, organic acids, aldehydes, ketones	20,000,000	Production to start trickling out by end '55. Fischer-Tropsch synthesis.
Imperial Cane Sugar	Sugarland, Tex	Cane sugar	3,000,000	Planned. Second major expansion since '47. Present capacity, 2.5 million lb. per year.
Inland Steel	Indiana Harbor, Ind	Coke oven	Multi-million	87 new ovens, 445,000 tons coke per year. To complete July '56.
Jefferson Chemical	Port Neches, Tex	Ethanolamines	.....	Expanded capacity 50%.
Olin Industries (Badger Ord. Wks.)	Baraboo, Wis	Ball powder	21,000,000	Smokeless propellant powder for small arms ammunition.
Olin Mathieson Chemical	Brandenburg, Ky	Ethanolamines	.....	Construction started June '55.
Oronite Chemical	Richmond, Calif	Isophthalic acid	11,000,000	Due on stream Oct. '55. 50 million lb. per year.
PDP Co	Lewiston, Idaho	Coal carbonisation	100,000	Planned. Char plant, chemical byproducts. Low temperature process.
Pan American Refining	Texas City, Tex	Methyl mercaptan	.....	In operation early '55. 5 million lb. per year.
Peck, T. N. & Associates	Burnside, Ky	Furfural	3,000,000	Construction due complete summer '55. To produce charcoal briquettes, then recover waste gases for conversion into furfural.
Phillips Chemical	Sweeny, Tex	Ethylene	.....	Construction started. 145 million lb. per year.
Portland Gas & Coke	Portland, Ore	Refined hydrocarbons	16,000,000	Planned. From oil-gas.
Procter & Gamble	Chicago, Ill	Hydrogen	300,000	To be complete late '56. First step in major expansion for processing edible products.
Reichhold Chemicals	Charlotte, N. C	Formaldehyde	.....	In operation Oct. '54. 25 million lb. per year.
Reichhold Chemicals	Elizabeth, N. J	Maleic anhydride	.....	To double present plant's 2.5 million lb. per year capacity, using new catalyst and a modified reaction system.
Reichhold Chemicals	Seattle, Wash	Pentachlorophenol	.....	Initial capacity 2 million lb. per year. Scheduled to be increased to 6 million by late '55. Will also produce other chlorinated organics. New process.
Richfield Oil	Watson, Calif	Phthalic acid	.....	In semi-commercial operation Feb. '55.
Sharples Chemicals	Houston, Tex	Thiophene	.....	To start production summer '55. Socony process.
Shell Chemical	Houston, Tex	Bisphenol A	.....	Expansion due complete early '56.
Shell Chemical	Houston, Tex	Glycerine	.....	Expansion completed Aug. '55.
Shell Chemical	Martinez, Calif	Tertiary-butyl benzoic acid	.....	New plant unit due complete Dec. '55
Shell Chemical	Martinez, Calif	Ionol	.....	Expansion due complete Sept. '55.
Shell Chemical	Norco, La	Glycerine	.....	Planned. 30 million lb. per year. New process based on hydrogen peroxide and acrolein.
Simpson Coal & Chemical	Natchez, Miss	Vinyl chloride, ammonia	20,000,000	Complete second quarter '56. 30,000 tons acetylene per year, to go into vinyl chloride and 30,000 tons per year of ammonia.
Sinclair Refining	Houston, Tex	Detergent lube oil additives	2,500,000	Sulfonation unit under construction.
Skelly Oil	Eunice, N. M	Isobutane	250,000	Certificates of necessity granted.
Standard Oil (Ind.)	Wood River, Ill	Iso-octyl alcohol	.....	Commercial production started early '55. 10 million lb. per year. Oxo process.
Standard Ore & Alloy	Natchez, Miss	Acetylene, ammonia, vinyl derivatives	20,000,000	Will build. 30,000 tons per year acetylene; 60,000 tons per year ammonia.

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Do your manufacturing processes call for high-purity aromatic hydrocarbons, including toluol, xylol, paraxylene, and heavy aromatic solvents? If so, Sinclair has the answer to your needs.

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HEAVY ORGANICS, continued

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Stauffer Chemical	Le Moyne, Ala	Carbon bisulfide	2,700,000	Being engineered. Complete Aug. '56. Adjoin present units.
Stauffer Chemical	Lubbock, Tex	Insecticides, fungicides		Blending plant completed.
Stauffer Chemical	Omaha, Neb	Insecticide, herbicide	350,000	Under construction. Complete Nov. '55.
Stauffer Chemical	Willoughby, Ohio	Perchloromethyl mercaptan		Production capacity increased late '54.
Stepan Chemical	Joliet, Ill	Fatty acid amides		2 million lb. per year. To operate Dec. '55.
Stepan Chemical	Joliet, Ill	Sulfonated alkylated aromatics	150,000	2-3 million lb. per year. To operate Dec. '55
Synthetic Products	Cleveland, Ohio	Vinyl stabilizers, stearates, specialties		Expanding.
Tennessee Products & Chemical	Nashville, Tenn	Plasticizers		In operation by summer '55.
Texas Butadiene & Chemical	Houston, Tex	Aviation alkylates, butylenes, butadiene	29,300,000	Butane principal raw material. Houdry and furfural processes. Construction to begin fall '55. 40,000 tons per year butadiene.
Texas Eastman	Longview, Tex	Oxo chemicals		Expansion underway. Operate late fall '55.
Thiokol Chemical		Plasticizers		Has recently doubled capacity for two types.
Union Bag & Paper	Savannah, Ga	Tall oil rosin and fatty acids		Distillation plant due complete early '56. 15,000 tons per year crude oil.
Union Carbide (Carbide & Carbon)	S. Charleston, W. Va	Sorbic acid		To operate Aug. '55. Multi-million lb. per year capacity.
Union Carbide (Carbide & Carbon)	Texas City, Tex	Oxo chemicals		Construction completed late 54. 60 million lb. per year.
U. S. Gov't (Defense Dept.)	Chouteau, Okla	Nitroguanidine		Will build plant.
U. S. Industrial Chemicals		Isosebacic acid		Designing full-scale unit.
U. S. Pipe & Foundry	Birmingham, Ala	Coke oven		To install battery of 30 chemical-recovery ovens, bringing total to 180.
U. S. Rubber	Naugatuck, Conn	Miticide		Output doubled.
U. S. Steel	Clairton, Pa	Coke oven		Replacing 3-64 oven batteries.
U. S. Steel	Gary, Ind	Coke oven	50,000,000	Rebuilding two batteries, installing new unit differing from conventional design to give higher recovery of naphthalene and other coal chemicals.
Virginia-Carolina	Charleston, S. C	Phosphoric anhydride		Started up summer 54.
Warren Petroleum	Conroe, Tex	Acetaldehyde, other organics from butane and propane	2,000,000	2 million lb. per year. In operation.
West Virginia Pulp & Paper	Charleston, S. C	Refined tall oil	500,000	To complete construction by summer '55. 50 tons per day. Unique one-step process.
Youngstown Sheet & Tube	Youngstown, Ohio	Metallurgical coke	8,200,000	Certificate of necessity granted.

• Inorganics

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Abbott Laboratories	Oak Ridge, Tenn	Radioactive isotopes		Expansion underway to triple output. Due complete Aug. '55.
Acheson Industries	Orange, Tex	Dispersed pigments, carbon black	$500,000	In operation early '55. To supply polyethylene makers.
Air Reduction	Riverton, N. J	Liquid oxygen, nitrogen, argon, neon, krypton, xenon	10,000,000	In operation late '54. 110 tons liquid oxygen per day.
Alcoa	Bauxite, Ark	Alumina	54,000,000	In operation fall '54. 401,500 tons per year. Bayer process combined with lime-soda sinter operation.
Allied Chemical & Dye (General Chemical)	Detroit, Mich	Sulfuric acid		In operation Feb. '55. Expansion increases capacity by 100,000 tons.
Allied Chemical & Dye (General Chemical)	Kennewick, Wash	Liquid aluminum sulfate		Major addition to be built.
Allied Chemical & Dye (General Chemical)	Richmond, Calif	Sulfuric acid		Expansion to double capacity. To operate Oct. '55.
Allied Chemical & Dye (General Chemical)	Tacoma, Wash	Liquid aluminum sulfate		To be completed Sept. '55. Output for pulp and paper mills.
Allied Chemical & Dye (Nitrogen)	Hopewell, Va	Dry ice		New plant in operation May '55. 110 tons per day.
Allied Chemical & Dye (Solvay)	Syracuse, N. Y	Hydrogen peroxide		Due to operate Sept. '55. Non-electrolytic process.
Allied Chemical & Dye (Solvay Process)	Syracuse, N. Y	Caustic potash, potassium carbonate		In operation Sept. '54.
American Cyanamid	Savannah, Ga	Titanium dioxide		Due to operate summer '55.
American Lithium Chemicals	San Antonio, Tex	Lithium hydroxide	6,000,000	To process ore from Southern Rhodesia. Under construction. Due to operate Nov. '55.
American Sulphur & Refining	Sulphurdale, Utah	Sulfur	1,100,000	In operation April '55. 100 tons per day. Crystalline sulfur for insecticides and soil sulfur for fertilizers. Solvent extraction of surface ores.
Barium & Chemicals, Inc	Painesville, Ohio	Barium carbonate	Multi-million	Expansion.
Brea Chemicals	Brea, Calif	Nitric acid		In operation Aug. '55. 150 tons per day.
Cardox Corp	Memphis, Tenn	Liquid and solid carbon dioxide		In operation spring '55. 100 tons per day.
Cardox Corp	Ventura, Calif	Liquid and solid carbon dioxide		Reached full capacity March '55. 100 tons per day.

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Central Farmers Fertilizer	Georgetown Canyon, Idaho	Phosphorus	10,000,000	35,000 kva. furnace proposed. Also mining and beneficiation facilities.
Columbia Gypsum	Spokane, Wash.	Gypsum	.....	Increased capacity from 150 to 300 tons per day. For agricultural uses.
Columbia-Southern	Barberton, Ohio	Calcium chloride	3,000,000	In production first half '56.
Columbia-Southern	Lake Charles, La.	Chlorine, caustic soda	.....	Started production second quarter '55. Expansion of capacity by 100 tons per day chlorine, 110 tons per day caustic.
Columbia-Southern	Natrium, W. Va.	Titanium tetrachloride	5,500,000	Scheduled for production first quarter '56. 100 tons per day. For Electro Met's titanium plant at Ashtabula.
Consolidated Cement	Paulding, Ohio	Cement	.....	1,250,000 barrels per year. Complete fall '56.
Consolidated Chemical Industries	Baytown and Houston, Tex.	Sulfuric acid	9,000,000	Sludge acid regeneration units on stream, making total of five operated by C. C. I. 500 tons per day at each location.
Consolidated Chemical Industries	Houston, Tex.	Alum liquor	250,000	In operation early '55. 50 tons per day.
Consolidated Chemical Industries	Le Moyne, Ala.	Sulfuric acid	2,000,000	To start construction in Sept. '55, complete late '56. 500 tons per day.
Diamond Alkali	Painesville, Ohio	Chromic acid	.....	In operation June '55.
Dow	Freeport, Tex.	Soda ash	3,000,000	Complete Oct. '55. 300 tons per day.
Du Pont	East Chicago, Ind.	Sulfuric acid	.....	In operation spring '55. Largest single unit.
Du Pont	Edge Moor, Del.	Titanium dioxide	.....	Under construction. Expansion.
Eagle Picher	Galena, Kan.	Sulfuric acid, zinc	4,000,000	Started up Aug. '54. Uses sulfur dioxide from roasting zinc ores. 300 tons per day acid.
Fisher Scientific	Fair Lawn, N. J.	Reagent chemicals	1,200,000	In operation. First plant designed exclusively for reagent chemicals.
Food Machinery & Chemical (Westvaco)	Newark, Calif.	Sodium hexametaphosphate	.....	12 million lb. per year plant completed Nov. '54.
Food Machinery & Chemical (Westvaco)	Lawrence, Kan.	Dry ice	.....	Due complete by summer '55. Use carbon dioxide from phosphate operations.
Food Machinery & Chemical (Becco)	Vancouver, Wash.	Hydrogen peroxide	1,000,000	Capacity being increased 50%. Due complete early '56.
Foote Mineral	Sunbright, Va.	Lithium hydroxide	2,000,000	Added 6 million lb. per year to capacity. Completed early '55.
Freeport Sulphur	Thibodaux, La.	Sulfur	25,000,000	Completed 4 year expansion in Louisiana's swamps. Company output has risen 30% since start. to 2.1 million tons in 1954.
General Aniline & Film	Linden, N. J.	Chlorine, caustic soda	5,000,000	In operation by fall '55. 50 tons per day.
General Portland Cement	Chattanooga, Tenn.	Cement	1,500,000	Will expand and rehabilitate plant.
General Portland Cement	Fort Worth, Tex.	Cement	.....	1,250,000 barrels per year.
Girdler	Louisville, Ky.	Catalysts	1,000,000	Expanded facilities. Essentially a job-shop operation.
Glidden	Sparrows Point, Md.	Titanium dioxide	10,000,000	Under construction. Complete May '56. 12,000 tons per year.
W. R. Grace (Davison Chemical)	Curtis Bay, Md.	Cracking catalysts	4,000,000	Replacing current units. Complete early '56.
W. R. Grace (Thurston Chemical)	Joplin, Mo.	Sulfuric acid	1,500,000	Will use to make ammonium sulfate, phosphoric acid, super and triple super.
Hercules Powder	Bacchus, Utah	Dynamite	2,000,000	Construction underway to consolidate dynamite production now done at Hercules, Calif.
Hooker Electrochemical	Montague, Mich.	Caustic soda	.....	Added evaporation equipment for 73% caustic.
Ideal Cement	Houston, Tex.; Ada, Okla.; Trident, Mont.; Superior, Neb.; Redwood City, Calif.; Mobile, Ala.; Boettcher, Colo.; Baton Rouge, La.; Okay, Ark.; New Orleans, La.	Cement	55,000,000	Will lift annual capacity from 21.5 million barrels to 31. New plants at first four locations listed, expansions at remainder.
International Minerals & Chemical	Niagara Falls, N. Y.	Hydrochloric acid	.....	New 60 tons per day unit added (20 Baume).
Jefferson Lake Sulphur	Manderson, Wyo.	Sulfur	.....	150 long tons per day recovery plant in operation early '55. From hydrogen sulfide.
Johns Manville	Lompoc, Calif.	Synthetic silicates	.....	To be completed by mid '56. From diatomaceous earth.
Kaiser Aluminum & Chemical	Baton Rouge, La.	Alumina	27,000,000	Raise capacity to over 800,000 tons per year.
Kaiser Aluminum & Chemical	Columbiana, O.	Refractories	4,000,000	Due complete late '55.
Leslie Salt	North San Francisco Bay	Salt	3,000,000	Initial production from expansion due in '58. Solar evaporation with supplemental sprayers. Eventually will reach 200,000 tons per year.
Lion Oil	Luling, La.	Carbon dioxide	550,000	42 tons per day. In operation.
Liquid Carbonic	Houston, Tex.	Carbon dioxide	500,000	In operation May '55. 40 tons per day.
Liquid Carbonic	Oakland, Calif.	Carbon dioxide	1,500,000	40 tons per day. In operation June '55.
Mallinckrodt Chemical	St. Louis, Mo.	Niobium tantalum pentoxides	.....	Planned. 1 million lb. per year.
Manganese Chemical	Riverton, Minn.	Manganese carbonate	.....	Completed second phase of expansion program · 70,000 lb. per day.
Marquette Cement Mfg.	Chicago area	Cement	4,400,000	To expand capacity by 1.5 million barrels per year.
McLouth Steel	Trenton, Mich.	Tonnage oxygen	.....	In operation early '55. First plant in U. S. to use Linde Fraenkl process.
Monsanto	Kearny, N. J.	Phosphoric acid, sodium tripolyphosphate	.....	Due to operate by fall '55. 50,000 tons per year sodium tripolyphosphate and other products.

INORGANICS, continued

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Monsanto	Long Beach, Calif.	Phosphoric acid	.....	On stream Jan. '55.
Monsanto	Monsanto, Ill.	Phosphoric acid	.....	New acid burner installed.
Monsanto	Monsanto, Ill.	Sulfuric acid	.....	400 tons per day. Leonard Monsanto type contact acid plant. Completed early '55.
Monsanto	St. Louis, Mo.	Tetrasodium pyrophosphate, sodium tripolyphosphate	.....	New unit installed for former, expansion made to latter.
Monsanto	Soda Springs, Idaho	Phosphorus	.....	Second electric furnace. Double output. In operation Dec. '54.
Monsanto	Trenton, Mich.	Phosphoric acid	.....	Production increased.
National Gypsum	Westwego, La.	Gypsum	6,000,000	About to start construction. Second step in company's 5 year $75 million expansion program.
National Lead	St. Louis, Mo.	Titanium dioxide	.....	Full operation by end '55. 36,000 tons per year additional capacity.
Nevada Ore Refining	Reno, Nev.	Manganese sulfate	.....	Operations started late '54. 50 tons per day. Ultimately to produce other manganese chemicals.
Newport Industries	Pensacola, Fla.	Hydrogen	.....	New unit in operation fall '54.
Northern Chemical Industries	Searsport, Me.	Sulfuric acid	650,000	Second Monsanto type contact acid plant due complete early '56. 100 tons per day. Will bring total actual capacity to 220 tons per day.
Northwest Refining & Chemical	Spokane, Wash.	Zinc oxide	.....	18 tons per day zinc oxide, 30 tons per day ammonium sulfate. Entirely new process. To complete Sept. '55.
Northwestern Glass	Seattle, Wash.	Glass	300,000	New batch plant planned to be completed Nov. '55.
Norton	Huntsville, Ala.	Fused magnesia, fused zirconia, boron carbide, special products	1,300,000	Project underway for AEC. Later will probably also make aluminum oxide and silicon carbide.
Oldbury Electro Chemical	Columbus, Miss.	Sodium chlorate, phosphorus pentasulfide	4,000,000	On stream Oct. '54. 12,000 tons per year sodium chlorate. Now already expanding.
Peerless Cement	Detroit, Mich.	Cement	6,000,000	Planned. 1 million barrels per year plant to start up late '56 or early '57.
Pennsylvania Salt Mfg.	Paulsboro, N. J.	Phosphoric acid	.....	New unit in operation late '54. 25 tons per day P_2O_5. Primarily for triple superphosphate.
Permanente Cement	Victorville, Calif.	Cement	12,000,000	Under construction. 2 million barrels per year. Scheduled for production fall '56.
Pittsburgh Plate Glass	Cumberland, Md.	Plate glass	34,000,000	Under construction. To operate Oct. '56.
Rico Argentine Mining	Rico, Colo.	Sulfuric acid	1,500,000	In operation Aug. '55. 150 tons per day. To supply uranium mills. Pyrites from mill tailings to be upgraded and used in initial acid-making operation.
Shea Chemical	Adams, Mass.	Phosphoric acid, dicalcium phosphate	.....	Enlarging facilities for acid as a preliminary step to pilot planting new organic specialties.
Shea Chemical	Columbia, Tenn.	Elemental phosphorus	.....	Second furnace due complete late '56. Additional 40 million lb. per year.
Shea Chemical	Dallas, Tex.	Sodium phosphate, phosphoric acid	.....	To complete late '56. 80,000 tons per year acid.
Shea Chemical	Jeffersonville, Ind.	Phosphoric acid, sodium tripolyphosphate, tetrasodium phosphate	.....	Operations begun late '54. 75,000–80,000 tons per year acid, for conversion to 45,000 tons per year phosphates.
Shell Chemical	Norco, La.	Hydrogen peroxide	.....	New plant unit now in engineering stages. Due complete early '57.
Standard Chemical Products	Charlotte, N. C.	Textile chemicals	750,000	Complete summer '54.
Standard Sulfur	Near Freeport, Tex.	Sulfur	1,500,000	Frasch process plant to be completed late '55. Minimum capacity of 200 tons per day.
Stauffer Chemical	Bayonne, N. J.	Processed sulfurs, insecticides.	350,000	Modernization due complete Dec. '55.
Stauffer Chemical	Monongahela, Pa.	Allotropic sulfur	800,000	In operation late '54. Output to rubber makers.
Stauffer Chemical	Tacoma, Wash.	Liquid aluminum sulfate	.....	To be completed Oct. '55.
Stauffer Chemical	Tampa, Fla.	Processed sulfurs, insecticides.	300,000	Started up June-July '55.
Synthetic Mica	Caldwell, N. J.	Synthetic mica	.....	In production late '54. Capacity of five furnaces is 1,000 tons per year. First commercial production.
Tennessee Corp.	Tampa, Fla.	Potassium silicofluoride	.....	In production early '55.
Union Chemical & Materials (Frontier Chemical)	Wichita, Kan.	Chlorine, caustic soda, chlorinated solvents	6,000,000	Doubling capacity for chlorine and caustic, to build chlorinated solvents plant.
Union Carbide (Linde)	Seattle, Wash.	Liquid oxygen	250,000	In production Aug. '55. Liquid capacity equivalent to 10 million cu. ft. gas per month.
Union Oil	Oleum, Calif.	Sulfur	1,500,000	In production March '55. 50 tons per day recovered from refining gases.
U. S. Gov't. (Chemical Corps)	Muscle Shoals, Ala.	"Dichloro"	50,000,000	In operation summer '54. Intermediate in production of nerve gases.
Universal Atlas Cement	Gary, Ind.	Cement	.....	3 million barrels per year.
Virginia-Carolina Chemical	Fernald, Ohio	Phosphoric acid, sodium tripyrophosphate, tetrasodium	1,000,000	On stream late '54. 36,000 tons per year acid, and 18–20,000 tons tripolyphosphate.
West End Chemical	West End, Calif.	Salt cake	1,250,000	On stream June '55. New process. 150 tons. per day. Extract from natural brine deposits.
Weyerhaeuser Timber	Longview, Wash.	Chlorine, caustic soda	.....	On stream '56. 100 tons per day chlorine. Largest single chlorine producing capacity of any U. S. paper mill.

Grace Chemical Company Selects an Air Products INCORPORATED AIR SEPARATION PLANT

GRACE CHEMICAL COMPANY
3 HANOVER SQUARE, NEW YORK 4, N.Y.

W. R. GAGE
PRESIDENT

March 1, 1955

Mr. C. R. Anderson, Vice President
Air Products, Incorporated
P. O. Box 538
Allentown, Pennsylvania

Dear Mr. Anderson:

The Grace Chemical Company's new anhydrous ammonia-urea plant at Memphis, Tennessee has been "on-stream" now for some time. The successful operation of the equipment is in no small part due to the manner in which the air separation unit has functioned.

The low-temperature equipment supplied by your company was erected under the supervision of your engineering staff with a very minimum of difficulty. The presence of your men during the plant "shake-down" period contributed greatly to our starting production with less delay than normally is to be expected on a project of this size.

Very truly yours,
GRACE CHEMICAL COMPANY
W. P. Gage

WPGsew

Air Products Air Separator in Grace Chemical Company's new ammonia plant.

Grace Chemical Company, subsidiary of W. R. Grace and Company, has started operations at its new anhydrous ammonia-urea plant at Memphis, Tennessee. The new plant was constructed to put this century-old firm into the relatively new agricultural chemical field on a large scale. Production is expected to exceed the rated capacity of 90,000 tons of ammonia and 54,000 tons of urea annually.

An important unit in the process is the air separation plant designed and built by Air Products, Inc. to split air into nitrogen and oxygen. Air Products has built over 700 air separators which are being operated successfully throughout the world.

Satisfaction, from the initial inquiry to the successful operation of the plant, is assured when your low-temperature processing work is entrusted to Air Products.

If your project calls for gas separation by low-temperature processing, get in touch with us.

36-page brochure discusses the broad possibilities of low-temperature processing and describes Air Products' facilities. Write for a free copy.

Air Products INCORPORATED

Dept. F, Box 538, Allentown, Pa.

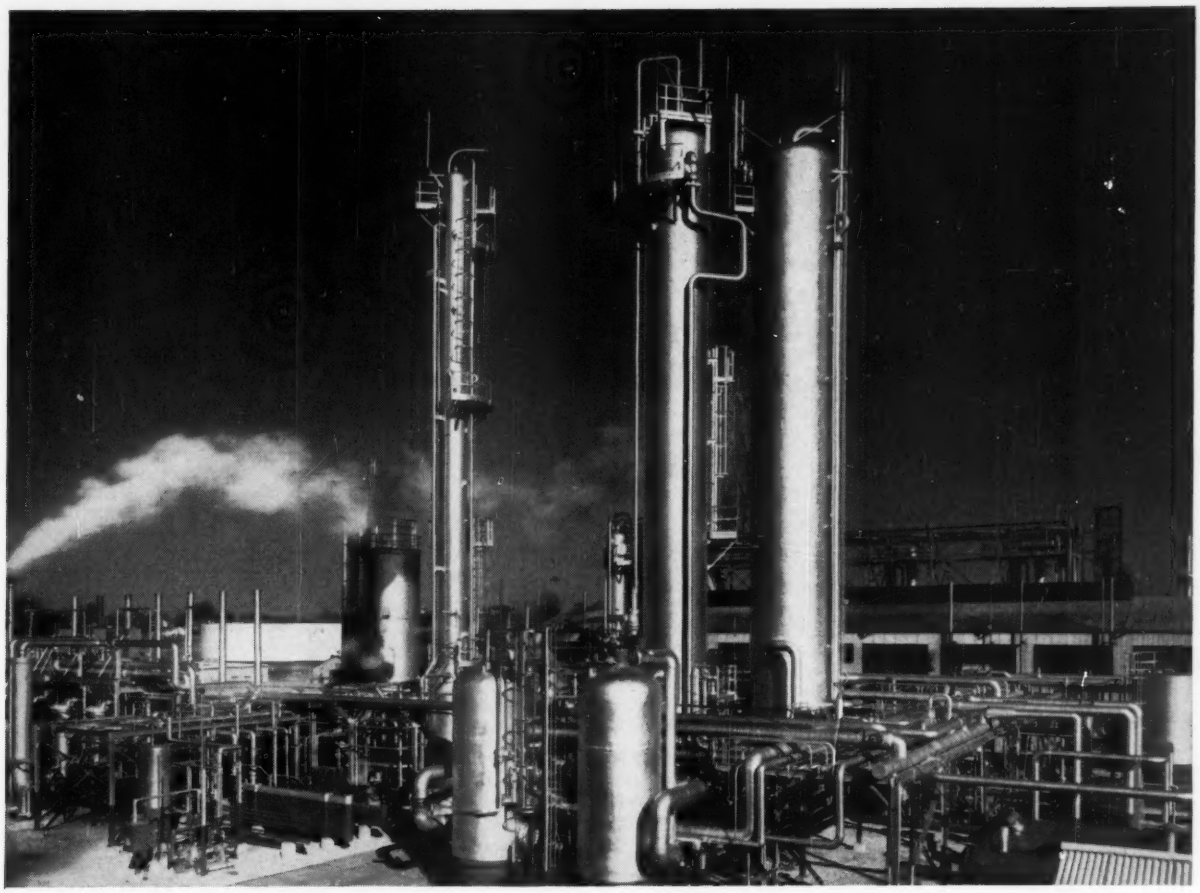
Specialists in Low-Temperature Processing

• Metals

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Alco Products	Dunkirk, N. Y.	Nickel plated metals	.....	Plant for chemical nickel plating in production.
Alcoa	Point Comfort and Rockdale, Tex	Aluminum	35,000,000	To expand smelting capacity by 65,000 tons per year. Begin operation second quarter '56.
Anaconda Aluminum	Columbia Falls, Mont.	Aluminum	.....	Reduction plant on stream Aug. '55. 120 million lb. per year primary aluminum.
Columbia Titanium	Natrium, W. Va.	Titanium	10,000,000	Planned. Joint project of Columbia-Southern Chemical and I.C.I. 5,000 tons per year. New sodium reduction process.
Cramet, Inc	Chattanooga, Tenn.	Titanium	25,000,000	Due to reach design capacity of 6,000 tons per year early '56.
Dow	Freeport, Tex.	Magnesium	.....	In operation fall '54. Recovers magnesium previously lost as part of waste sludge. Increases Dow's magnesium capacity by more than 2 million lb. per year.
Dow	Midland, Mich.	Titanium	.....	Gov't. contract. Will up capacity from 600 lb. to 1½ tons per day by end '55, to 5 tons per day by mid '56.
Dow-Corning	Midland, Mich.	Silicon	1,200,000	New 6,000 kva. furance in operation. 98% pure. 3,000 lb. every 3 hr. Reduction of quartzite rock with coke and charcoal at 3,100 F.
Du Pont	Johnsonville, Tenn.	Titanium	40,000,000	Proposed. ODM grant, 90% tax write off. 7,500 tons per year. Would lift U. S. sponge capacity to 30,000 tons per year.
Freeport Sulphur	New Orleans, La.	Nickel	.....	Semi-commercial plant, 50 tons per day. To use sulfuric acid leaching process. Under construction.
Harvey Aluminum	The Dalles, Ore.	Aluminum	35,000,000	Proposed. 54,000 tons per year reduction plant. Bonneville Power Administration has extended for one year the effective date of a 20-year power contract.
Harvey Machine	.....	Titanium	.....	Planned. 6,000 tons per year.
Olin-Mathieson	West Virginia	Aluminum	74,000,000	Amended certificate of necessity obtained. 60,000 tons per year.
Rare Metals	Weiser, Idaho	Mercury	.....	To build "largest single rotary kiln mercury recovery unit in world." 170 tons per day.
Reynolds Metals	Ohio River Valley	Aluminum	168,500,000	To build 200 million lb. plant.
Reynolds Metals	Sheffield, Ala.	Aluminum	.....	Additional units planned. Part of $22,500,000 project for Alabama and Texas plants. 50 million lb. per year. Complete in '56.
Reynolds Metals	Texas	Aluminum	.....	Additional units planned. Part of $22,500,000 project for Alabama and Texas plants. 20 million lb. per year. Complete in '56.
St. Joseph Lead & Pittsburgh Consolidation Coal	Pennsylvania	Aluminum	85,000,000	May build. Powered by coal. Would be fifth U. S. producer of primary aluminum. 66,000 tons per year.
Titanium Metals	Henderson, Nev.	Titanium	.....	Plan to increase present capacity of 3,600 tons per year by 5,400 tons per year.
Union Carbide (Electro-Metallurgical)	Marietta, Ohio	Manganese	.....	Operations started late '54. 6,000 tons per year.
Union Carbide Electro-Metallurgical)	Ashtabula, Ohio	Titanium	31,500,000	Under construction. Due complete mid '56. 7,500 tons per year. To use sodium reduction process.

About New Plants & Facilities . . .

This fifth annual inventory lists 443 major new chemical processing plants or facilities announced, planned, under construction or completed in the U. S. during the last six months of 1954 and the first six months of 1955. It does not include minor projects; it does not include projects costing less than $200,000. Listings, compiled from many sources, have been checked by major companies or by CE's field editors for accuracy, completeness and current status.



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For detailed information on any of the above processes, write us on your company letterhead stating the bulletin or subject in which you are interested. Address: *Foster Wheeler Corporation, 165 Broadway, New York 6, N. Y.*

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METALS, continued

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Uranium Reduction	Moab, Utah	Uranium	8,000,000	Under construction. In operation fall '56. Will use AEC's resin in pulp process.
Wheland Co	Chattanooga, Tenn	Aluminum	70,000,000	50,000 tons per year.

• Petroleum & Natural Gas Products

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Amerada Petroleum	Williston Basin, N. D.	Natural gasoline	10,000,000	Planned.
American Oil	Yorktown, Va	Refined petroleum	25,000,000	To begin construction midsummer '55. 35,000 barrels per day.
American Republics	Silsbee, Tex	Gasoline	1,000,000	Due complete Aug. '55.
Arizona Refineries	Coolidge, Ariz	Refined petroleum	.....	25,000 barrels per day refinery due complete early '56. Part of $100,000,000 project.
Aurora Gasoline	Detroit, Mich	Refined petroleum	400,000	Additional facilities planned for higher octane gasoline, improved burning oils, and improved industrial fuel oils. New byproduct—coke by fluid coking.
Big West Oil	Kevin, Mont	Petroleum refining	500,000	Certificates of necessity granted.
Carter Oil	Billings, Mont	Petroleum coke	.....	World's first commercial fluid coking unit on stream early '55. 200,000 tons per year. 6,900 barrels per day hydrofiner and 2,500 barrels per day catalytic reformer being built, scheduled for completion early '56.
Champlin Refining	Enid, Okla	Refined petroleum	4,000,000	Fluid cat cracker (9,000 barrels per day) due complete late '55. Platformer (5,000 barrels per day) due complete summer '55.
Cities Service	Lake Charles, La	Refined petroleum	22,000,000	Increased refinery's capacity by 20,000 barrels per day.
Columbian Carbon	St. Mary Parish, La	Carbon black	3,000,000	First unit on stream. Two more units to go on stream late '55. Total capacity: 60 million lb. per year.
Continental Oil	Lake Charles, La	Benzene, toluene, xylenes	16,000,000	Refinery expansion complete summer '54. Uses sulfur dioxide process.
Continental Oil	Ponca City, Okla	Dairy wax	500,000	Will expand refinery to include 11 million lb. per year dairy wax plant. Complete early '56.
Cosden Petroleum	Big Spring, Tex	Petroleum refining	400,000	Certificates of necessity granted.
Crown Central Petroleum	Pasadena, Tex	Reformed petroleum	1,000,000	5,500 barrels per day. Houdry cat reformer. On stream spring '55.
Dansho Refining	Pettus, Tex	Refined petroleum	2,600,000	3,500 barrels per day TCC cat cracker due complete late '55.
Dansho Refining	Pettus, Tex	Reformed petroleum	.....	New platformer on stream.
Derby Oil	Wichita, Kan	Reformed petroleum	2,700,000	Platformer under construction.
Esso Standard Oil	Baton Rouge, La	Reformed petroleum	1,300,000	In operation. Fluid hydroformer.
Esso Standard Oil	Baton Rouge, La	Reformed petroleum	.....	World's largest fluid hydroformer on stream. Will produce up to 25,000 barrels per day high octane gasoline.
Esso Standard Oil	Everett, Mass	Purified gas	.....	New Girbotol liquid hydrocarbon purification plant placed in operation early '55.
Frontier Refining	Cheyenne, Wyo	Refined petroleum	1,500,000	Increasing refinery capacity to 17,500 barrels per day. Platformer and unifiner due on stream Oct. '55.
General Petroleum	Ferndale, Wash	Refined petroleum	40,000,000	On stream April '55. 35,000 barrels per day. First major refinery in Pacific Northwest. During next two years, $5.6 million will be spent to enlarge it.
Great Northern Oil	Pine Bend, Minn	Refined petroleum	25,000,000	25,000 barrels per day crude topping unit due complete Aug. '55. Also TCC unit, ultraformer.
Great Plains Refinery Development	Rapid City, S. D.	Refined petroleum	3,000,000	Due complete end '55. 3,000 barrels per day.
Gulf Oil	Port Arthur, Tex	Refined petroleum	.....	Due complete summer '55. Crude topping unit —100,000 barrels per day. Cat cracker—68,000 barrels per day.
Gulf Oil	Port Arthur, Tex	Purified gas	.....	Under construction. Plant to remove carbon dioxide and hydrogen sulfide from natural gas. Charge stock for ethylene plant.
Gulf Oil	Toledo, Ohio	Petroleum reforming	.....	10,000 barrels per day platformer on stream spring '55.
Gulf Refining	Cincinnati, Ohio	Reformed petroleum	.....	Platformer due complete summer '55. 70,000 barrels per day.
Gulf Refining	St. Landry Parish, La	Natural gasoline	5,000,000	Due complete by summer '55.
Hancock Oil	Signal Hill, Calif	Refined petroleum	3,500,000	6,000 barrels per day cat cracker and cat polymerizer.
Humble Oil & Refining	Baytown, Tex	Reformed petroleum	8,000,000	Two hydroformers due complete summer '55.
International Petroleum & Chemical Exchange	Lake Charles, La	Aviation alkylate	10,000,000	Certificates of necessity granted.
Magnolia Petroleum	.....	Reformed petroleum	.....	Thermofor catalytic reforming unit on stream mid-March '55. 19,000 barrels per day.

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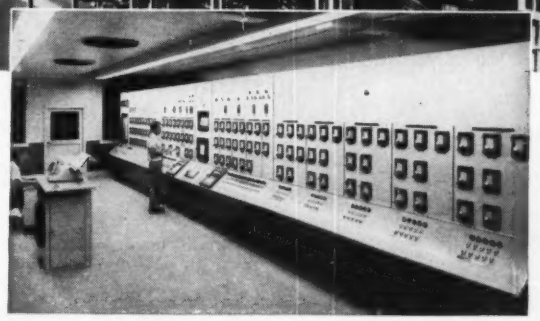

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INDUSTRIAL CHEMICALS

PETROLEUM & NATURAL GAS, continued

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
McMurrey Refining	Tyler, Tex	Aviation gasoline	3,000,000	Due complete mid '55.
Naph-Sol Refining	Muskegon, Mich	Refined petroleum		1,000 barrels per day platformer on stream early '55.
Pan American Refining	Texas City, Tex	Petroleum reforming	Multi-million	Largest ultraforming unit on stream early '55. 21,000 barrels per day.
Pennzoil	McClintock, Pa	Petroleum refining	850,000	Certificate of necessity granted.
Petrocarbon Chemical	Irving, Tex	Naphtha fractions	1,000,000	In operation Aug. '54. Primarily for protective coatings.
Phillips Petroleum	Hutchinson County, Tex. & Phillips, Tex.	Natural gasoline	600,000	Certificates of necessity granted.
Pontiac Eastern	Mississippi	Refined petroleum	10,000,000	Planned. 12,000 barrels per day.
Prime Oil	Calumet City, Ill	Refined petroleum	10,000,000	Planned. 15,000 barrels per day.
Pure Oil	Adena Field, Colo	Natural gasoline	3,000,000	Due complete summer '55.
Pure Oil	Smith's Bluffs, Tex	Reformed petroleum		Planned. Catalytic reforming unit.
Quaker State Oil Refining	St. Mary's, W. Va., & Emlenton, Pa.	Petroleum reforming		Two platformers started up early '55.
Rock Island Refining	Indianapolis, Ind	Reformed petroleum		Platformer on stream fall '54. 2,400 barrels per day.
Rothschild Oil	Santa Fe Springs, Calif.	Refined petroleum	2,000,000	6,000 barrels per day cat cracker.
Salt Lake Refining	Salt Lake City, Utah	Refined petroleum	2,500,000	Second cat cracker in operation July '55. 8,000 barrels per day.
Shell Oil	Anacortes, Wash	Refined petroleum	75,000,000	Due complete late '55.
Shell Oil	Houston, Tex	Petroleum reforming		16,000 barrels per day platformer and hydrodesulfurization unit due on stream early '56.
Sinclair Chemicals	Marcus Hook, Pa	Toluene, xylenes, para-xylene		Under construction. 18 million gal. per year. Udex unit.
Sinclair Oil	Marcus Hook, Pa	Refined petroleum	12,000,000	Replacing crude oil stills with new 60,000 barrels per day stills to boost yield of high quality products. Complete mid '56.
Sinclair Refining	East Chicago, Ind	Reformed petroleum	13,000,000	Due complete mid '55. Cat reformer. 16,000 barrels per day.
Sinclair Refining	Houston, Tex	High octane gasoline	16,500,000	Cat reformer due complete '56. 24,000 barrels per day.
Socony Vacuum	Torrance, Calif.; Beaumont, Tex.	Reformed petroleum	165,000,000	13 cat reformers and other facilities planned.
Standard Oil (Calif.)	Richmond & El Segundo, Calif.	Reformed petroleum	30,000,000	Completed May '55. Cat reformer at each location.
Standard Oil (Ind.)	Mandan, N. D.	Refined petroleum		On stream late '54. 30,000 barrels per day.
Standard Oil (Ind.)	Mandan, N. D.	Reformed petroleum		Ultraforming unit (6,000 barrels per day) due complete spring '56.
Standard Oil (Ind.)	Whiting, Ind	Refined petroleum	5,000,000	Company's largest crude oil distillation unit due on stream early '56. Will up refining capacity at Whiting to 220,000 barrels per day.
Standard Oil (Ohio)	Cleveland, Ohio	Refined petroleum	4,400,000	Due complete late '56.
Standard Oil (Texas)	El Paso, Tex	Reformed petroleum	2,700,000	4,500 barrels per day platformer due complete by fall '55.
Sun Oil	Marcus Hook, Pa	Refined petroleum	7,500,000	Due complete summer '55. Houdriflow cat cracker.
Sun Oil	Marcus, Hook, Pa., & Toledo, Ohio	Reformed petroleum		Installed Houdriformers at both plants.
Sun Oil	Toledo, Ohio	Refined petroleum	6,000,000	Due complete by summer '55. Houdriflow cat cracker. 27,000 barrels per day.
Sunray Oil	Acadia Parish, La	Gas processing		Plant to be built.
Superior Refining	Superior, Wis	Reformed petroleum		1,000 barrels per day platformer on stream late '54.
Texas Co	Casper, Wyo	Reformed petroleum		4,800 barrels per day platformer due complete second quarter '56.
Texas Co	El Paso, Amarillo, & Port Arthur, Tex.	Reformed petroleum		Second and third new combination platforming-unifining units on stream. First is operating at Port Arthur, Tex. (20,000 barrels per day).
Texas Co	Lawrenceville, Ill	Petroleum reforming		13,600 barrels per day catalytic reforming unit in operation.
Texas Co	Lawrenceville, Ill	Petroleum alkylates		Alkylation unit completed second quarter '55.
Texas Co	Lockport, Ill	Petroleum alkylates		1,000 barrels per day alkylation unit to be completed third quarter '55.
Texas Co	Lockport, Ill	Reformed petroleum		10,800 barrels per day platformer due complete third quarter '55.
Texas Co	Tulsa, Okla	Reformed petroleum		9,000 barrels per day platformer due complete third quarter '55.
Texas Co	Westville, N. J	Reformed petroleum		Combination platforming-unifining unit on stream first quarter '55.
Texas Co	Wilmington, Calif	Refined petroleum		10,000 barrels per day hydrotreater completed second quarter '55.
Texas Co	Wilmington, Calif	Petroleum reforming		10,000 barrels per day platformer on stream second quarter '55.
Texas Co	Wilmington, Calif	Petroleum reforming		1,000 barrels per day isomerization unit in operation.
Texas Co	Wilmington, Calif	Petroleum refining		25,000 barrels per day furfural refining unit to be completed first quarter '56.

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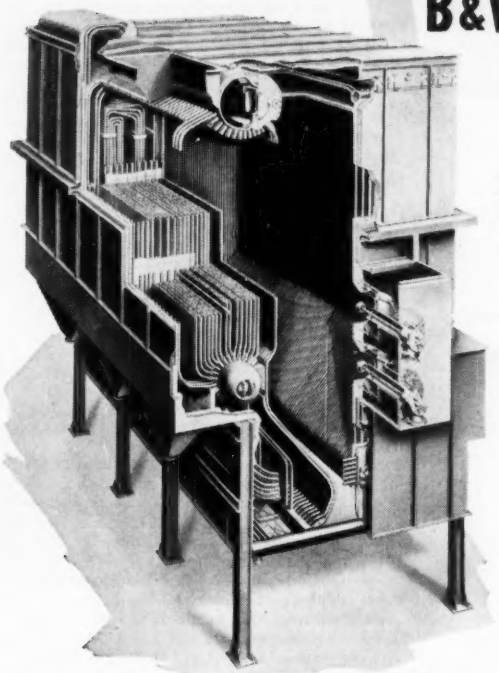

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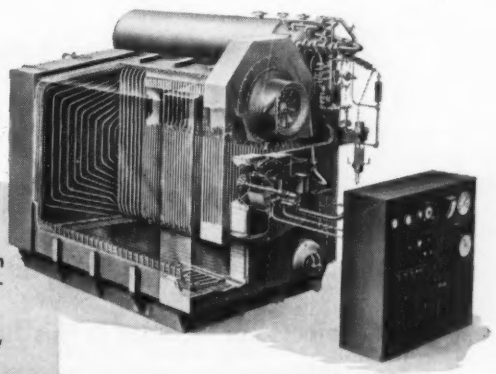

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BABCOCK & WILCOX BOILER DIVISION

G-735

PETROLEUM & NATURAL GAS, continued

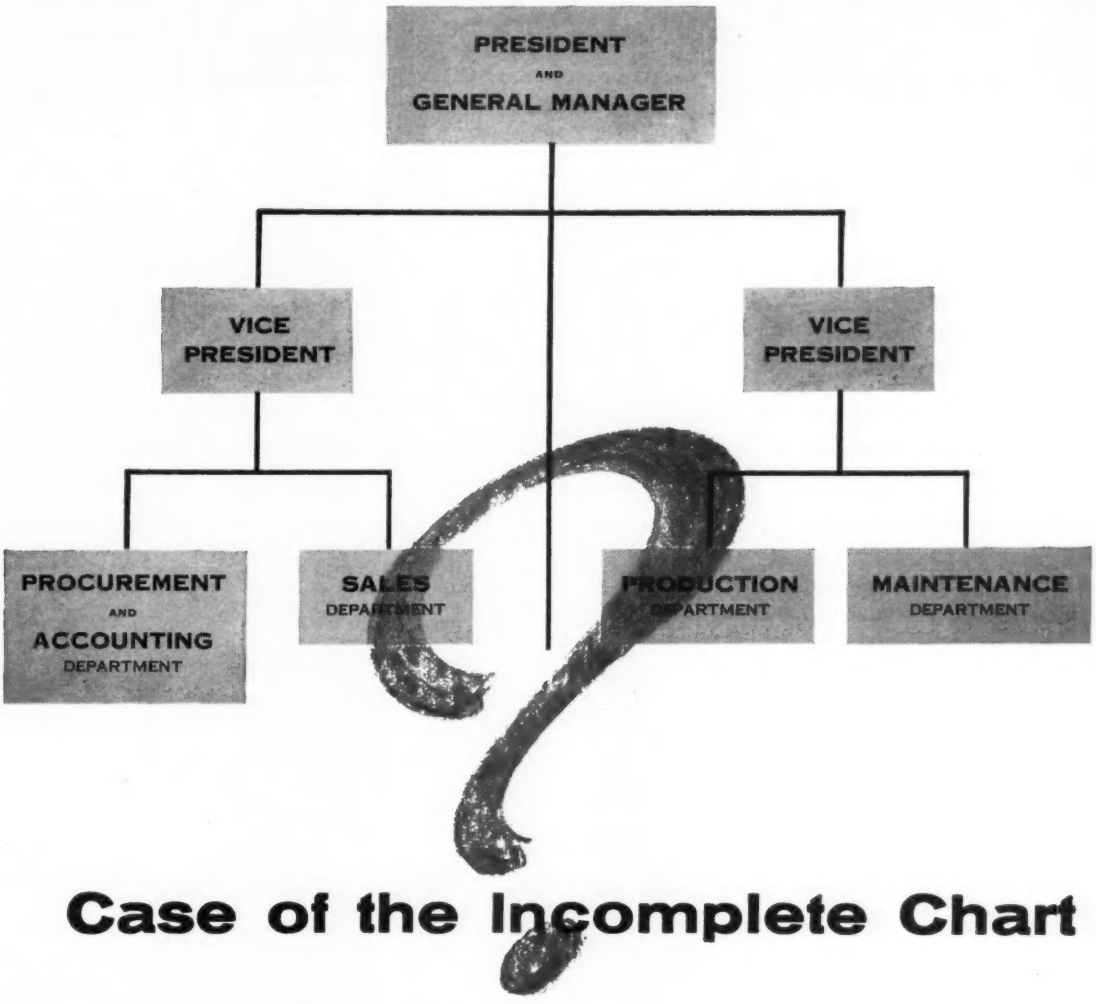
FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Texas Co.	Wilmington, Calif.	Petroleum refining		13,000 barrels per day butane deasphalter to be completed second quarter '56.
Texas Natural Gasoline	Coke County, Tex.	Natural gasoline		Construction contract awarded.
Tidewater Associated Oil	Avon, Calif.	High octane gasoline		10,000 barrels per day platformer started up Dec. '54. 42,000 barrels per day fluid coker under construction. When completed in May '56, it will be world's largest.
Tidewater Associated Oil	Wilmington, Del.	Refined petroleum	110,000,000	Under construction. Initial operation late '56. 130,000 barrels per day. Will incorporate world's first power plant using byproduct coke from the Esso fluidized coking process.
Union Oil	Parachute Creek, Colo.	Oil from shale		Engineering work nearly completed, site being cleared. No date set for start of 1,000 ton per day plant construction.
United Gas Pipe Line	Runge, Tex.	Hydrocarbons		Complete. To recover 70,000 gal. per day liquid hydrocarbons from 100 million cu. ft. per day natural gas.
United States Oil & Refining	Tacoma, Wash.	Refined petroleum	10,000,000	Under construction. 10,000 barrels per day.

• Plastics & Resins

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Allied Chemical & Dye (National Aniline)	Hopewell, Va.	Molding resin		New plant in operation May '55.
American Aniline & Extract	Calvert City, Ky.	Polyvinyl alcohol		Due to complete construction late '55.
American Cyanamid	Wallingford, Conn.	Thermoplastic molding compounds		Complete mid '56. To use methyl styrene from Fortier.
American Latex Products	Hawthorne, Calif.	Polyurethane	125,000	Boosted capacity in Aug. '55 from 2 to 10 million lb. per year.
Borden	Domingues, Calif.	Polyvinyl acetate		5 million lb. per year plant completed March '55.
Celanese	Belvidere, N. J.	Plastics film, molding powder, polyethylene film		Expansion to be completed end of '55.
Dow	Freeport, Tex.	Polyethylene	11,000,000	Complete Aug. '55. 25 million lb. per year.
Du Pont	Circleville, Ohio	Polyester film	10,000,000	Started production in Oct. '54.
Du Pont	Deepwater Point, N. J.	Polyisocyanates		New plant to be completed mid '56.
Du Pont	Niagara Falls, N. Y.	Polyvinyl alcohol	3,000,000	Expansion to be completed early '56.
Du Pont	Parkersburg, W. Va.	Tetrafluoroethylene		Planned. Expansion of facilities by 100%.
General Tire & Rubber	Ashtabula, Ohio	Polyvinyl chloride	6,000,000	In full operation. 25 million lb. per year. Suspension polymerization.
Insular Chemical	Long Island	Polyvinyl chloride		To complete spring '56.
Key Chemicals	Medley, Fla.	Synthetic resins		In operation.
Koppers	Kobuta, Pa.	Polyethylene		Under construction. Due complete Sept. '55.
Marblette Corp.	Long Island City, N. Y.	Epoxy and phenolic resins	500,000	Due complete summer '55.

About Previous Plant Inventories . . .

For projects not included in this July 1954-June 1955 period, refer to tabulations on new plants and facilities first compiled by CE and published annually since 1951 in these issues: February 1951, 1952, 1953; January 1954; Inventory (mid-September) 1954. These surveys have listed over 3,000 new construction projects in the U. S. chemical process industries—the most comprehensive tabulation of its kind generally available. Next year's Inventory will list projects for the coming 12 months.



Case of the Incomplete Chart

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CHEMICAL ENGINEERING SERVICES

PLASTICS & RESINS, continued

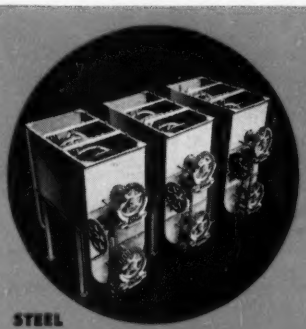
FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Mobay Chemical	New Martinsville, W. Va.	Isocyanates, polyester resins	.....	Due on stream fall '55. Several hundred tons per month of each.
Monsanto	Indian Orchard, Mass.	Vinyl chloride polymers and copolymers	9,000,000	Doubling capacity. In production early '56.
Monsanto	Texas City, Tex.	Polyethylene	.....	High-density boilable polyethylene plant due on stream late summer '55. "Interim plant" until larger facilities can be built. New 60 million lb. per year conventional polyethylene plant in full operation.
National Petrochemical	Tuscola, Ill.	Polyethylene	14,000,000	On stream April '55. 26 million lb. per year. Will boost to 50 million in 2–3 years.
National Starch Products	Meredosia, Ill.	Vinyl acetate polymers and copolymers	.....	Part of $3.5 million expansion program at Plainfield, Chicago, and San Francisco. Under construction.
Olin-Mathieson	Olin, Ind.	Cellophane	.....	Under construction. To operate last half '56. 33 million lb. per year.
Phillips Chemical	Pasadena, Tex.	Polyethylene	.....	Construction started. Low-pressure process.
Rayonier	Jesup, Ga.	Chemical cellulose	25,000,000	In operation. Increases firm's chemical cellulose capacity to 572,000 tons per year (half of total U. S. capacity).
Rayonier	Southeastern U. S.	Chemical cellulose	30,000,000	Planned. To operate in 2 years. 100,000 tons per year.
Reichhold	Azusa, Calif.	Polyester resins	.....	On stream Aug. '54. 10 million lb. per year.
Seiberling Rubber	Newcomerstown, Ohio	Rigid polyvinyl chloride	.....	Completed late '54.
Shawinigan Resins	Trenton, Mich.	Polyvinyl resin	Multi-million	To complete last quarter '56. Safety glass interlayer.
Spencer Chemical	Orange, Tex.	Polyethylene	14,000,000	Started up in Feb. '55. 45 million lb. per year.
Taylor Fiber	Betzwood, Pa.	Laminated plastics, polyester-glass materials	1,750,000	Expanded capacity 50%.
Texas Eastman	Longview, Tex.	Polyethylene	8,000,000	Plant completed late '54. 20 million lb. per year. New spherical pellet form.
Union Carbide (Bakelite)	Torrance, Calif.	Polyethylene, ethylene glycol	36,000,000	To operate early '56. 60 million lb. per year of polyethylene.
Union Carbide (Bakelite)	Marietta, Ohio & Bound Brook, N. J.	Polystyrene	Multi-million	Due complete by end '55. To double firm's output.
Union Carbide (Bakelite)	Ottawa, Ill.	Vinyl cast film	.....	More than doubled production.
Union Carbide (Carbide & Carbon)	Seadrift, Tex.	Polyethylene, ethylene oxide, ethylene glycol, butadiene	.....	On stream Feb. '55. 60 million lb. per year of polyethylene.
Union Carbide (Linde)	Long Reach, W. Va.	Silicones	14,000,000	Complete end '55 or early '56.
U. S. Rubber (Naugatuck Chemical)	Painesville, Ohio	Vinyl resins	.....	Doubled production facilities late '54.

• Pulp & Paper

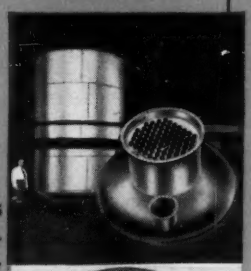
FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
American Box Board	Filer City, Mich.	Semi-chemical pulp	12,000,000	In production late '54. 350 tons per day. Largest of type in U. S.
Bowaters Southern Paper	Calhoun, Tenn.	Newsprint, kraft pulp	60,000,000	In full operation late summer '54. Already expanding from 160,000 tons per year newsprint and 65 tons per year kraft pulp to 275,000 tons per year newsprint. $25 million expansion due complete fall '56.
Buckeye Cellulose	Foley, Fla.	Pulp	25,000,000	In operation summer '54. 300 tons per day.
Coos Bay Pulp	Anacortes, Wash.	Sulfite pulp	1,000,000	Expansion underway.
Crossett	Crossett, Ark.	Bleached food container board, related products	16,000,000	150 tons per day. To operate by end '55.
Crown Zellerbach	Antioch, Calif.	Unbleached kraft paper	.....	400 tons per day unit to operate mid '56.
Crown Zellerbach	St. Helens, Ore.	Bleached kraft pulp and paper	14,000,000	35,000 tons per year. General expansion underway.
East Texas Pulp & Paper	Evadale, Tex.	Bleached pulp, kraft paper	27,500,000	300 tons per day of both products. Started operations Dec. '54.
Great Northern Paper	East Millinocket, Me.	Newsprint	.....	Increased capacity by 500 tons per day late '54.
Hudson Pulp & Paper	Palatka, Fla.	Bleached sulfate pulp, bleached kraft paper, tissue	15,000,000	Expansion to be complete early '56.
International Paper	Mobile, Ala.	Newsprint	20,000,000	Under construction. 100,000 tons per year. Due complete end '56. Expansion.
National Gypsum	Westwego, La.	Paper	6,000,000	Planned.
R. W. Paper	Longview, Wash.	Glassine and greaseproof paper	7,000,000	Under construction. New company formed by Rhinelander and Weyerhaeuser.
Rayonier	Southeast	Pulp	30,000,000	New 100,000 ton pulp mill announced.
Riegel Carolina	Acma, N. C.	Pulp	5,800,000	To expand 33%.
St. Mary's Kraft	St. Mary's, Ga.	Bleached paper	.....	Operating early '55. Unusual design, more flexible process.
Scott Paper	Anacortes, Wash.	Pulp	1,000,000	Major improvement program completed July '55.
Scott Paper	Detroit, Mich.	Paper	.....	New paper machine and converting equipment due to operate before end '55.

VERSATILITY

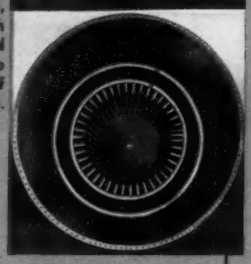
√ DESIGN
√ ENGINEERING
√ FABRICATION

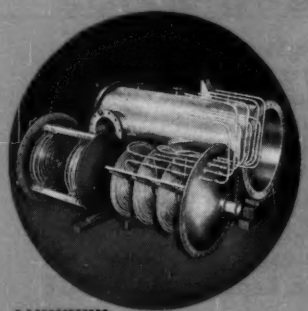


STEEL
Crystallizers, 10' 3" High.
Specially Designed, with cooling Coils.

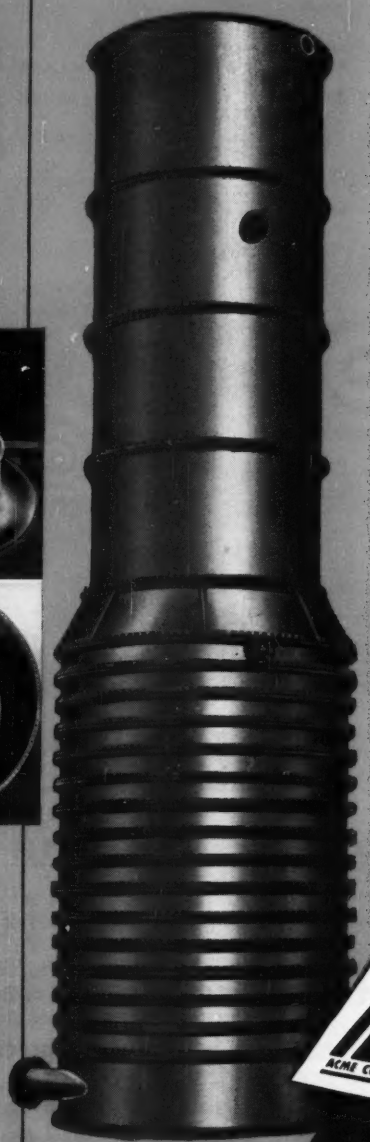


STAINLESS STEEL
Reaction Vessel, 10' 0" Dia., with Special Coils and Bubble Cap Section. One of four Units.





ALUMINUM
Pressure Vessel, A.S.M.E. Code Construction.



COPPER
Distillation Unit, containing Perforated and Bubble Cap Trays.

When purchasing new processing equipment, important economies are to be gained from working with one versatile source. Acme experience in engineering, design and fabrication makes possible this concentration of responsibility.

The illustrations on this page, representing just a few from thousands of successful installations, give some indication of the scope of Acme achievement. This diverse experience with all the ferrous and non-ferrous metals assures the skillful fabrication of equipment for any purpose.

When planning a replacement or expansion program, consult Acme first!

ACME
Processing Equipment
ACME COPPERSMITHING & MACHINE CO., ORELAND, PA.
DESIGN AND FABRICATION IN ALL FERROUS AND NON-FERROUS METALS.

PULP & PAPER, continued

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Southland Paper Mills	Lufkin, Tex	Newsprint	.....	Expansion completed summer '54. Capacity increased by 70,000 tons to 200,000 tons per year.
United States Gypsum	New Orleans, La	Paper	Multi-million	Planned.
United States Gypsum	Houston, Tex	Paper	5,000,000	Under construction.
Valentine Pulp & Paper	Bayou Lafourche, La	Paper	.....	Increasing production from 50 to 75 tons per day. From bagasse.
West Virginia Pulp & Paper	Pennsylvania	Pulp	30,000,000	Planned. Part of $100 million for new plants and equipment during next five years.
Western Kraft	Albany, Ore	Kraft paper	.....	Due on stream Nov. '55. 100 tons per day.
Weyerhaeuser Timber	Cosmopolis, Wash	Pulp	20,000,000	Construction to start late this year. Complete '57.

• Rubber

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Du Pont	Montague, Mich	Neoprene	15,000,000	Started construction Jan. '55. Complete late '56.
Dunlop Tire & Rubber	Buffalo, N. Y	Rubber products	5,000,000	Expansion completed summer '54. 80% increase in output.
Firestone Tire & Rubber	Akron, Ohio	Synthetic rubber	.....	Expanding production. Now 30,000 tons per year GR-S.
Firestone Tire & Rubber	Lake Charles, La	Synthetic rubber	.....	Expanding production 13%. $1.2 million for Lake Charles and Akron.
General Latex & Chemical	Ashland, Ohio	Natural and synthetic latex and resin compounds.	300,000	New plant completed.
B. F. Goodrich	Shelton, Conn	Foam rubber	3,500,000	Doubling output. To complete by Dec. '55.
B. F. Goodrich Chemical	Louisville, Ky	Buna-N rubber and latex	2,500,000	Doubling of capacity to be complete early '56.
Hercules Powder	Parlin, N. J	Chlorinated rubber	1,000,000	50% increase in capacity. Complete Dec. '55.
U. S. Rubber	Santa Ana, Calif	Foam rubber	.....	Doubling capacity.

• Textile Fibers

FIRM	LOCATION	PRODUCTS	DOLLARS	JOB STATUS & REMARKS
Allied Chemical & Dye (National Aniline)	Chesterfield, Va	Nylon fiber	Multi-million	On stream summer '55. 20 million lb. per year.
American Enka	Morristown, Tenn	Rayon staple	20,000,000	To begin construction late summer or early fall '55. To operate end '56. 50 million lb. per year.
American Viscose	Front Royal, Va., & Parkersburg, W. Va.	Viscose staple	.....	Adding total of 90 million lb. per year. Will bring firm's capacity to 300 million lb. per year, 60% of U. S. total.
Chemstrand	Pensacola, Fla	Nylon fiber	.....	To increase capacity from 50 to 58 million lb. per year. Complete in '56. Additional increase to 88 million lb. per year in design stage.
Courtaulds (Ala.)	Le Moyne, Ala	Viscose staple	.....	Now tripling output to 150 million lb. per year.
Industrial Rayon	Covington, Va	Nylon fiber	5,000,000	In operation late '54. 6 million lb. per year. Uses caprolactam.
U. S. Rubber	Winnsboro, S. C	Synthetic yarns and blends	.....	Expansion and modernization completed late summer '54. Capacity now 3,250,000 pounds per year.

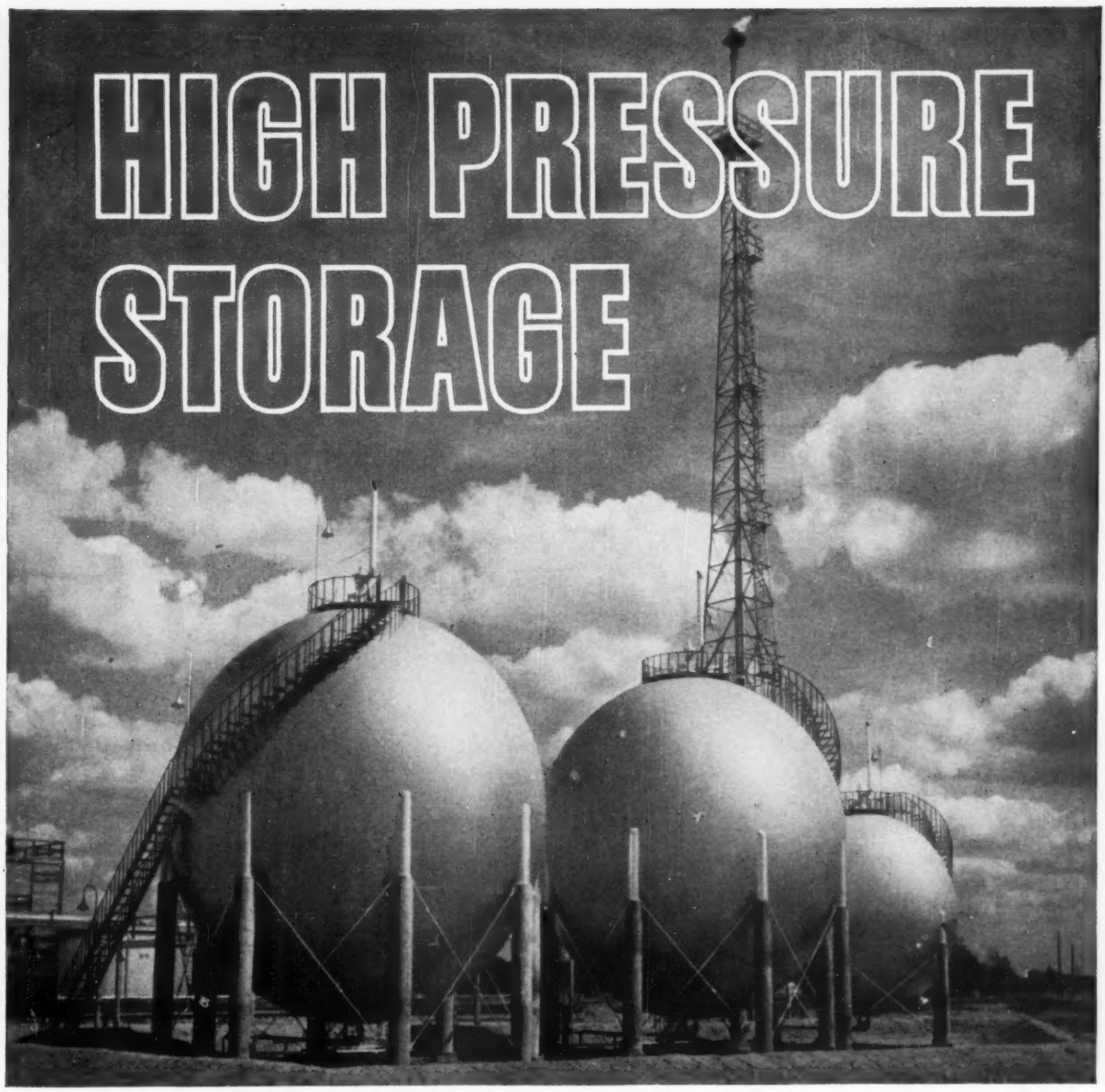
Reprints . . .

New Plants & Facilities + New Processes & Technology

For extra copies of your 1955 Inventory of plants & facilities and new processes & technology, order Chemical Engineering reprint No. 69, price 75¢.

For other reprints now available, see the listing which precedes the reader service cards in this issue. Get the latest and best information on cost estimating, corrosion control as well as CE Reports and the CE Refresher series.

For Speed, Use Reader Service Cards



GRAVERSPHERES

solve gas and liquid storage problems

For pressure storage of process butane, iso-butane, natural gasoline and other volatile liquids and gases, Graverspheres are a "natural."

Graverspheres are formed in Graver shops and are first carefully assembled to insure accurate fit. After this they are shipped to location, erected and field-welded.

These spheres—the very shape of which is ideal for high-pressure storage in quantity—are available in capacities from 1,000 to 30,000 bbl. For gas storage Graverspheres are made to withstand pressures up to 100 p.s.i.g. and for liquid storage from 20 to 90 lb. water pressure.

As is the case with Graver tanks, towers and pressure vessels, traditional Graver quality and craftsmanship are inherent in Graverspheres.

GRAVER TANK & MFG. CO., INC.
EAST CHICAGO, INDIANA
CHICAGO • NEW YORK • PHILADELPHIA • EDGE MOOR, DEL.
CATASAUQUA, PA. • PITTSBURGH • CLEVELAND • DETROIT • TULSA
SAND SPRINGS, OKLA. • HOUSTON • ODESSA, TEXAS • CASPER, WYO.
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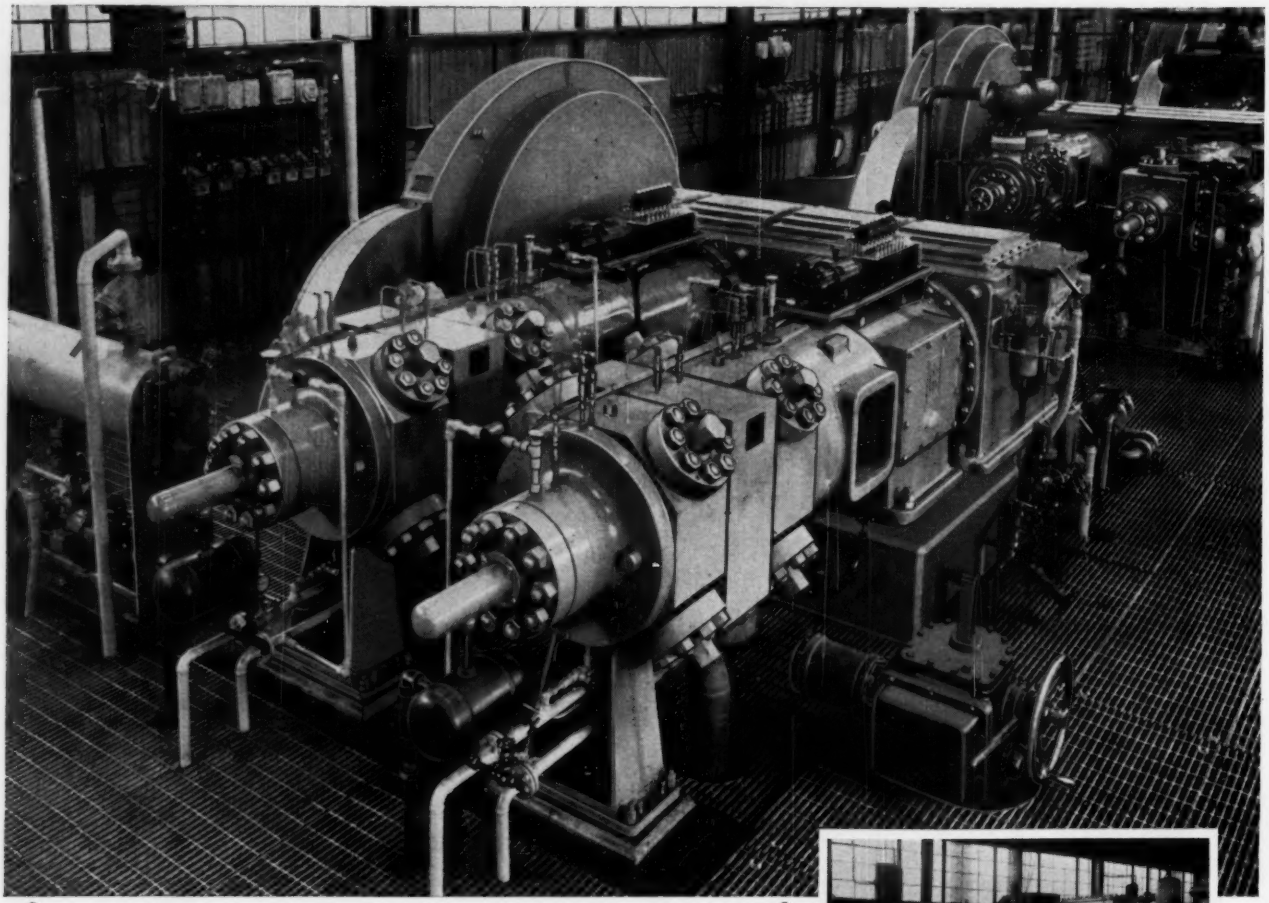
GRAVER builds tanks, towers and pressure vessels for the chemical and petroleum industries



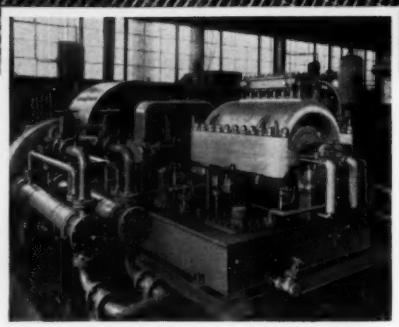
Synthesis gas **that did not combine to form ammonia during its stay in the converter is recirculated by this HHE compressor. Each of the two cylinders increases the pressure of the hydrogen-nitrogen mixture 400 psi. Design maximum working pressure is 3815 psia. This 212 cfm unit is driven by a 500 hp motor.**

PRESSURE is an all important factor in the manufacture of synthetic ammonia. Many different pressures, high and low, must be held to the exact process requirements. Also, the nature of the gases being compressed varies due to differences in chemical properties.

At the Atlantic Refining Company's new ammonia synthesis plant, all pressure and capacity requirements are easily met by the I-R centrifugal compressor and the seven versatile HHE reciprocating compressors, a total of 6110 horsepower. Air and seven other gases or mixtures of gases are handled by these heavy-duty units.

This is an interesting example of the *complete flexibility* of I-R process compressor design. Either centrifugal or reciprocating compressors can be supplied, whichever type best meets existing economic conditions. Or, as in this plant, both types of compressors may be used in conjunction with each other.

Whatever the process, you can meet your *exact requirements* with process-engineered Ingersoll-Rand compressors. It will pay you to call in your I-R representative on your next job.



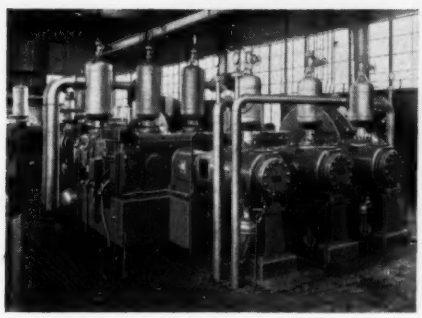
Air **is compressed in this 1750-hp centrifugal compressor for liquifaction and separation of nitrogen. The nitrogen is combined with the hydrogen to form the synthesis gas and for a nitrogen wash in gas purification.**

ROCK DRILLS • **AIR AND ELECTRICAL TOOLS** • **VACUUM EQUIPMENT**

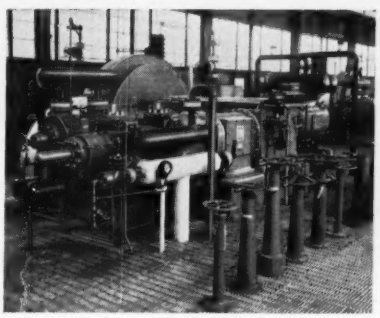
Here's How I-R Equipment

PUTS THE PRESSURE ON AMMONIA PRODUCTION

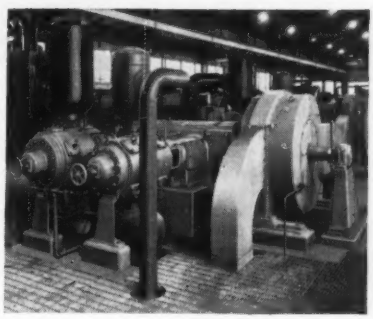
at the Atlantic Refining Company's Synthesis Plant in Philadelphia



Methane, ethylene and propane gases are handled as separate streams in this six cylinder HHE compressor. Two of these 450-hp units provide the necessary low temperature cascade refrigeration for gas purification.



Nitrogen and synthesis gas are handled separately by this dual purpose compressor. Two of the cylinders compress 75% H_2 and 25% N_2 to reactor operating pressure in two-stages. Maximum reactor pressure is 3815 psia. The third cylinder compresses 100% N_2 in two-stages. Each of the two units on this service is driven by a 1080-hp motor.



Refrigeration is also necessary to condense the newly formed synthetic ammonia. This and other plant refrigeration requirements are provided by the two 400-hp ammonia refrigeration units shown here.

Ingersoll-Rand

1-287 11 Broadway, New York 4, N. Y.

CENTRIFUGAL PUMPS • CONDENSERS • GAS AND DIESEL ENGINES

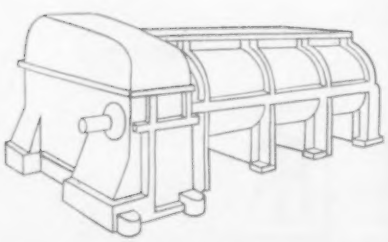
BAKER PERKINS mixers will thoroughly mix and knead almost any material for the chemical processing industry

There is a BAKER PERKINS Mixer built to efficiently mix and knead materials ranging in consistency from dry powders and light fluids to stiff plastic masses. Close clearance between the blades and trough keep every particle of the material in constant motion so that no part of the batch escapes the thorough mixing action of the blades. Intensive kneading is maintained as the material is pulled and squeezed against the blades, saddle and sidewalls. Consult a B-P sales engineer for full facts.

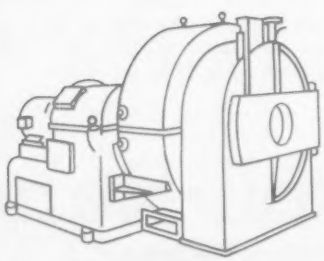
SIZE 16, NEM B-P "Universal" Mixing and Kneading Machine for heavy plastic masses. Working capacity 150 gallons; total capacity 225 gallons. Fabricated steel trough shell jacketed for 150 psi. steam or water pressure. Cast iron trough ends are not jacketed. Saddle section has thermocouple for temperature control. Cast steel Sigma or Double Naben blades cored for circulating steam or water. Oil tight gear guards; anti-friction bearings. 50 HP motor.

BAKER PERKINS INC.
CHEMICAL MACHINERY DIVISION
SAGINAW, MICHIGAN

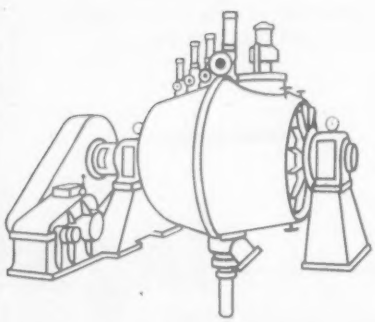
Other BAKER PERKINS products



EQUIPMENT FOR FOUNDRY INDUSTRY



CENTRIFUGALS



EQUIPMENT FOR RAYON PRODUCTION

1955 INVENTORY

NEW...

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367 PROJECTS . . . CE's exclusive inventory of what's new in processes and technology . . . where they're being put to use . . . what fields are moving ahead and in which direction . . . a master checklist organized for fast reference.

HERE is CE's sixth annual inventory of major new processes and technology advances in the chemical process industries. It covers 367 projects that were first announced, commercialized or that made important news during the two-year period ending July 1955. It is limited to developments that have been made public; we've made no attempt to include "secret" developments nor those still in the early stages of research. For more information, see p. 50.

1955 INVENTORY

New Processes and Technology

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• Fats & Oils

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Cottonseed oil	Filtration-extraction	Mississippi Cottonseed Products Co. Greenwood, Miss.	Process eliminates prepressing of seed. Cooked meats are extracted with hexane and slurry filtered on continuous horizontal filter. Marc is countercurrently washed on the filter.	Developed by Lukens Steel Co. Plant is in operation, handling 7,100 lb./hr. of cooked meats.
Detergents	From tallow	General Aniline & Film Corp. Linden, N. J.	Tallow acids are converted to acid chlorides, reacted with methyl taurine and caustic. Improved process for methyl taurine is significant.	In production.
Drying oils	Hardening	Meyercord Co. Chicago, Ill.	Process hardens drying oils in 2 to 20 sec. by use of sulfur dichloride vapor.	Called Chem-Dry process, developed by Armour Research Fdn., Chicago.
Epoxy compounds	*In-situ* epoxidation	Becco Chemical Div., Food Machinery & Chemical Corp. Buffalo, N. Y.	Controlled molar ratio of acetic acid to H_2O_2 in presence of mineral acid catalyst and elevated temperatures converts fats and oils to epoxy derivatives.	Pilot-plant scale.
Epoxy compounds	Peroxide-ion exchange	E. I. du Pont de Nemours & Co. Wilmington Del.	Process still experimental epoxidizes unsaturated fats and oils with hydrogen peroxide in presence of an acidic ion exchange resin. Older processes used sulfuric acid catalyst. Becco Chemical Div. has a similar process.	New process gives high yield in one step with essentially no byproduct formation. If commercially successful, process will make resin plasticizers and stabilizers, also intermediates for coatings, lubricants, insecticides.
Fatty acids	One-step purification	John E. Schulze Div. of Bell & Gossett Co. Chicago, Ill. West Virginia Pulp & Paper Co. Charleston, S. C.	Process claimed to cut investment cost by one-third, operating cost by 50%, compared with usual fatty acid purifications. Needs only one tower, operating as dry high-vacuum fractionator.	Process operating several years at 30 tpd. in Schulze plant. Can be used on tall oil and crude fatty acids. West Virginia will use for 50 tpd. tall oil. Process offered by Bell & Gossett.
Fatty acids	Splitting	.....	Makes modern continuous fat splitting practical for small prdoucers.	Offered by Blaw-Knox.
Fatty acids, dibasic	Nitric acid oxidation	.....	Utilizes tallow and saturated fatty acids to yield dibasic fatty acids by oxidation with 5–25% aqueous nitric acid. Following oxidation, monobasic acids are removed by steam distillation.	Process developed by Stanford Research Institute. If and when commercialized, process may open important new outlets for tallows and greases.
Hydroxylated fats	Peracetic oxidation	Baker Castor Oil Co. Bayonne, N. J.	Cheap vegetable oils or animal fats are esterified, then oxidized with peracetic acid. Initial products are vinyl resin plasticizers.	Developed by USDA. Plant in commercial operation. Two other companies have also been licensed to use the process.

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Tung oil.....	Solvent extraction..	Crosby Forest Products Co. Picayune, Miss.	Tung nut press cake has 10–12% oil content. Solvent extraction process reduces this to less than 0.5%. Increase in yield is 20 to 25 lb. of oil per ton of whole nuts. Solvent is hexane.	New process for tung nut processors; idea borrowed from soybean technology.

• Fertilizers & Fertilizer Chemicals

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Ammonia synthesis gas	Burning peat.....	Eire Government..... Ireland	Eire considering construction of a large ammonium nitrate plant using peat as the raw material, to reduce its $26 million annual fertilizer imports.	.....
Ammonia synthesis gas	Coal partial combustion	Du Pont Co., Polychemicals Dept. Belle W. Va.	Powdered coal burned in fluidized bed in atmosphere of steam and deficient oxygen in furnace similar to conventional slag-tap boiler furnace. Produces CO and hydrogen.	Process being tried out on large scale to make synthesis gas for ammonia, eliminate coke ovens plus gas producers. Developed jointly by Du Pont, Babcock & Wilcox, and Bureau of Mines.
Ammonia synthesis gas	Coke oven gas separation	U. S. Steel Co..... Geneva, Utah; and Ketona Chemical Co., Ketona, Ala.	After normal treatment for recovery of byproducts, stripped oven gas will be used as hydrogen source. Ketona will use low-temperature process; probably similar process for U. S. Steel. Nitrogen probably from air separation	Coke oven gas hydrogen source has been used in Europe. Blaw-Knox designed U.S.S. plant for 200 tpd. ammonia. Singmaster & Breyer designed Ketona plant for 120 tpd.
Ammonia synthesis gas	Conversion from coke to natural gas	Tennessee Valley Authority Wilson Dam, Ala.	Existing plant for making ammonia from coke successfully converted to use natural gas as raw material.	Changeover complete.
Ammonia synthesis gas	High-pressure reforming	Shell Chemical Co..... Ventura, Calif.	Natural gas reforming reaction for synthesis gas operates at available gas pressure, thus saving 25–35% of power for subsequent compression of synthesis gas.	About 70% of gas feed converted to raw synthesis gas in reforming furnace, remainder in combustion furnace. Developed by M. W. Kellogg Co.
Ammonia synthesis gas	Partial oxidation of methane	Spencer Chemical Co..... Vicksburg, Miss.	210 tpd. plant using 95% oxygen for partial oxidation of natural gas to hydrogen and CO_2. Latter is removed. 1,000 tpd. air separation plant supplies oxygen and nitrogen. Texaco process.	Started up January 1954. Liquid nitrogen from separation plant is used for scrubbing hydrogen and in synthesis gas. Similar plants under construction elsewhere. Built by Foster Wheeler.
Ammonia synthesis gas	Partial oxidation of oil	Northern Chemical Industries Searsport, Me.	First to use exclusively Bunker C fuel oil charge, with Texaco-Hydrocarbon Research partial oxidation process.	Plant under construction.
Ammonium nitrate..	Continuous (Stengel)	Commercial Solvents Corp. Sterlington, La.	Ammonia and nitric acid react directly at 400° F. to yield molten nitrate, which is cooled on Sandvik steel belts, then crushed. Eliminates evaporation and graining or prilling.	200 tpd. plant in operation.
Ammonium nitrate..	Ammonia oxidation and reaction	Aburdarverksmidjan H.F.. Reykjavik, Iceland	Ammonia synthesized from electrolytic hydrogen, nitrogen from air fractionation, using hydro power. Synthesis operates at 5,150 psi. Part of 30 tpd. NH_3 output is oxidized to HNO_3. Two-stage crystallization reaction converts NH_3 and acid to nitrate, using reaction heat to evaporate all water produced.	Iceland's first chemical industry was built through collaboration of Consultant C. O. Brown and Singmaster & Breyer, New York.
Calcium metaphosphate, soluble	Hydrolysis	.....	Normal water-insoluble metaphosphate can be solubilized for enriching superphosphate or mixed fertilizers by hydrolysis with H_2SO_4 and water in presence of the fertilizer to be enriched.	Developed by Illinois Farm Supply Co., Chicago. Calcium metaphosphate is cheapest and most concentrated phosphorus source except elemental phosphorus.
Diammonium phosphate	From coke oven gas	Colorado Fuel & Iron Corp. Pueblo, Colo.	NH_3 in coke oven gas is removed by scrubbing with electric furnace phosphoric, rather than usual H_2SO_4. Produces fertilizer grade DAP. Koppers and Monsanto collaborated on process.	Process known before but previously unused because electric furnace phosphoric was too expensive. Wet process acid previously gave trouble with Fe and Al hydroxide precipitates.
Diammonium phosphate	Controlled acidulation	Missouri Farmers Assn.... Joplin, Mo.	Wet-process H_3PO_4 of 32% P_2O_5 content is ammoniated in two stages in a series of three agitated tanks. Slurry of 20–80 mixture of mono- and diammonium phosphates with 20% water contains any impurities from acid. Mixture is granulated, receives solid additives, is dried to complete fertilizer.	Process developed by Dorr-Oliver uses cheap wet-process acid without trouble from iron and aluminum impurities, avoids filtration and crystallization in new $5-million plant.
Diammonium phosphate	Vacuum crystallization	Tennessee Valley Authority Wilson Dam, Ala.	24% P_2O_5 wet process phosphoric is reacted with NH_3 so as to precipitate metallic impurities. These are filtered out and filtrate gets more NH_3 in a vacuum crystallizer. Crystal slurry is centrifuged, metallic phosphates added, and dried.	.....

FERTILIZER & FERTILIZER CHEMICALS, continued

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Fertilizer, complete..	Waste conversion...	Chicago Stockyards Composting Co. Chicago, Ill.	Stockyards waste is aerated at 160° F. until dustfree and odorless. Product is 2-2-2 fertilizer.	$250,000 plant in operation, capacity 3,500 tons/yr. Other similar operations on waste and garbage being considered in various cities.
Fertilizer, mixed.....	Automatic mixing..	Naco Fertilizer Co..... Ft. Pierce, Fla.	Complex, varied formulas batched by automatic scales and conveyors.	Plant in operation.
Fertilizer, mixed.....	Ammoniation-granulation	Super Crop Plant Foods ... Ottumwa, Iowa.....	Mixed fertilizer solids (superphosphate, potash) enter a rotary drum where sulfuric acid and ammoniating solution also enter through nozzles. Formation of $(NH_4)_2SO_4$ in place contributes 4,000 Btu. to drying needs for each 1 lb. acid. Drying and granulating aided by extra heat from an oil burner.	Low cost mixing-ammoniating-granulating process developed by Fertilizer Eng. & Equipment Co., Green Bay, Wis.
Fertilizer, mixed.....	Ammoniation-granulation	E. Rauh & Sons Fertilizer Co. Indianapolis, Ind.	Produces homogeneous, granular, free-flowing fertilizers with wide range of compositions. Storage curing is not required. Particle size can be controlled.	Licensed by Link-Belt Co., developed by S. J. Martinet of Rauh.
Fertilizer, nitrophosphate	Calcium nitrate conversion	Gewerkschaft Victor..... Castrop-Rauxel, Germany	Addition of small quantities of metallic salts such as Mg or Al permits high pH of ammoniated nitric-acidulated phosphate. This alkaline slurry can be treated with CO_2 to convert hygroscopic calcium nitrate to carbonate.	Process developed in France by Potasse et Engrais Chemique. Offered in U. S. as successful solution to nitric acidulation problem by Chemical & Industrial Corp., Cincinnati.
Fertilizer, nitrophosphate	Controlled acidulation	.....	Process makes non-hygroscopic fertilizer by nitric acidulation, using KCl to remove fluorine, NH_3 to neutralize and precipitate product.	Developed and offered by Cannac Research & Development Corp., New York.
Fertilizers, various...	CO_2 blasting.....	Various.....	Heaving action of expanding CO_2 released from a steel tube breaks up solidified storage piles. Safer than using dynamite.	Developed by Cardox Corp., Chicago.

• Fine Organics

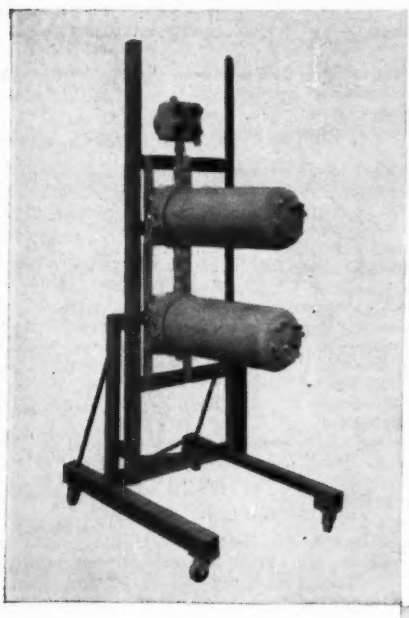
PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Adipic acid.....	.....	Allied Chemical & Dye Corp. Hopewell, Va.	New process will be used; may be related to production of caprolactum.	Will be used in Allied's production of nylon, possibly also for adipic esters.
Adipic acid.....	Synthetic.....	.....	New process uses a 70% nitric acid, diluted down with polyhydroxylated compounds to 30%; produces 90-95% pure adipic acid from cyclohexanol. Low temperatures are involved.	Laboratory-scale experiments developed by F. W. Brown of Clarkson College of Technology.
Adipic acid.....	Direct oxidation....	.....	Nitrogen dioxide is used to oxidize cyclohexane directly to adipic acid. Yield at 50° C. is 98% after reaction time of 43 hr.	Laboratory development of University of Texas, Austin, Tex.
Alkaloids.....	Synthetic.....	T. & H. Smith, Ltd..... Edinburgh, Scotland	Process starts with furan, which is converted to succindialdehyde. From there, atropine, homatropine and hyoscyamine are made.	In production. Claimed process makes makes products conforming to same standards as those from natural sources. Winthrop-Stearns has related process for synthesizing atropine.
Amylose, amylopectin	Starch fractionation	.....	Two new processes separate amylopectin Basic process involves heating alkali-dispersed starch solution, pH below 11, at 50-60° C. Acid process works at pH of 5 or less.	Developed by Textile Research Inst. Offered to member firms.
Anthraquinone.....	From naphthoquinone	American Cyanamid Corp. Bound Brook, N. J.	Butadiene is added to 1, 4-naphthoquinone, adduct is oxidized to anthraquinone.	Pilot plant in operation.
Aromatic acids.....	Coal oxidation.....	Dow Chemical Co..... Midland, Mich.	Pulverized bituminous coal, suspended in NaOH solution, is treated with oxygen at 270° C. and 900 psi. Product is mixture of aromatic acids.	Dow research is aimed at procedures for fractionation of product mix.
Aromatic monobasic acids	Catalytic oxidation.	Shell Chemical Corp..... Martinez, Calif.	Process yields tertiary-substituted benzoic acids, such as para-tertiary-butylbenzoic acid, by air oxidation with cobalt catalyst. For example, tertiary-butyl toluene blown with air at 175° C. and 50-75 psi. yields PTBBA in 2-4 hr. This is recovered as sodium salt.	Shell exploring market for PTBBA and other tertiary substituted benzoic acids. Plant is operating.
Benzene hexachloride	Continuous.....	Pennsylvania Salt Mfg.... Calvert City, Ky.	New, more efficient continuous process.	Construction underway for operation early in 1954.
Caprolactam.....	From cyclohexanone	Allied Chemical & Dye Corp. Hopewell, Va.	Cyclohexanone, made from phenol, reacts with hydroxylamine to get caprolactam.	In commercial operation. Product goes to make nylon-6.

Analysis moves from Lab to Line with P-E Infrared Analyzers

It's getting to be old-fashioned to run a stream composition determination in the control laboratory. Chemical manufacturers can now hook analytical instruments directly into the process stream where they produce continuous and instantaneous data to guide the operation of the system.

Perkin-Elmer has designed a variety of infrared analyzers for this purpose: the TRI-NON* group of nondispersion analyzers, series A, B, C and D; and the BICHROMATOR* Analyzer operating on the dispersion principle. Each is designed to solve a particular class of continuous analytical problem and performs a continuous analysis of a single component in a liquid or gas stream. Within each series, variation of standard components permits tailoring to specific problems.

P-E application engineers can provide all the help you need in the selection of the proper equipment for any given analysis. Service facilities are nationwide.

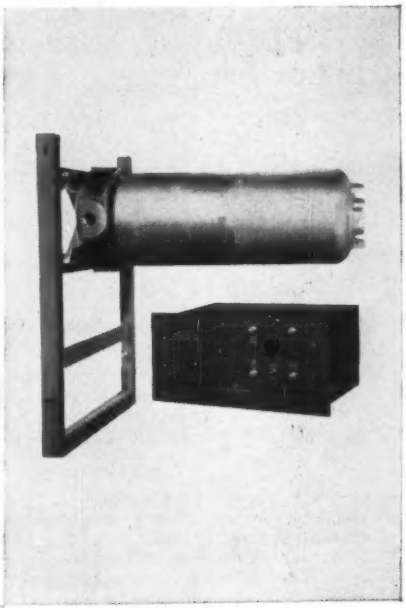


TRI-NON SERIES A

This is the deluxe series, offering maximum performance in all respects. These instruments are high in sensitivity, stability and discrimination, will operate under extreme ambient conditions, and are completely explosion proof. The pick-up section produces a shaft rotation which is proportional to the concentration of the gas of interest. This shaft rotation may appear, if desired, as an indicator at the instrument. Normally, it is transmitted through a slide wire potentiometer bridge circuit to the recorder by a 3 wire cable. This transmission system is not limited by a low voltage level and thus, there are no restrictions on the separation between the recorder and the analyzer.

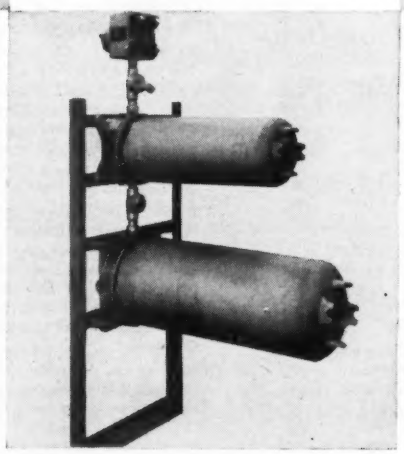
TRI-NON SERIES B

Explosionproof pick-up section with remotely located nonexplosionproof electronics and recorder. A multiwire cable over a maximum of approximately 500 ft. connects the two units. Performance, in the main, is equivalent to Series A instrument. Moderate price range. Usually this model involves a single servo loop incorporating the recorder.



TRI-NON SERIES C

Nonexplosionproofed. Pick-up section is nonexplosionproofed and connected by multiwire cable over a maximum of 500 ft. to the electronics section which is also nonexplosionproofed. Here again, this model involves a single servo loop incorporating the recorder. Somewhat less selective than other series but highly stable and adequate for many process stream analyses.



TRI-NON SERIES D

Nonexplosionproofed. All components — pick-up section, electronics and recorder — mounted in a cabinet with the pick-up section mechanically coupled to the recorder; has the same performance characteristics as Series C.

BICHROMATOR ANALYZER

Available explosionproofed and thermostatted. Automatic circuit testing and unitized construction simplify field servicing. Duplicates in a plant-designed instrument, the base line density method widely used in the infrared control laboratory.

THE **Perkin-Elmer** CORPORATION

*TM The Perkin-Elmer Corporation

830 Main Avenue, Norwalk, Connecticut

FINE ORGANICS, continued

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
alpha-Chloroethyl benzene	Catalytic hydrochlorination	Dow Chemical Co. Midland, Mich.	Use of packed column to hydrochlorinate styrene shown better than batch process in laboratory. Considerable savings in HCl; increases hydrochlorination rate up to 6-fold; less polymerization. Methanol and copper are reported to be best catalysts.	Full scale unit has been designed.
Citric acid	Fermentation	Various. Europe	Improved fermentation process gives high yield and wide feedstock flexibility. Operates on cane or beet molasses with addition of nutrients. Acid is recovered as calcium citrate.	Process developed by Noury & Vander Lande, in Holland, offered by Scientific Design Co. Dutch plant available for demonstration and operator training.
Citric and aconitic acid esters	Continuous esterification		Conversions better than 99% in contact times of 2 to 3 min.	Small-scale testing of process developed by Brooklyn Poly.
Cobalt naphthenate	Direct metal reduction	Nuodex Co. Elizabeth, N. J.	Naphthenic acid and powdered cobalt react directly at 190° F. in presence of air and water.	In production.
Cortisone	Total synthesis	Monsanto Chemical Co. St. Louis, Mo.	Process based on toluene as starting material. Fewer steps and better yields than earlier syntheses.	Still in experimental stage. $18.4-million certificate of necessity in hand; no plant plans yet announced.
Detergent sulfonates	Sulfonation with SO_3	Ninol Laboratories. Chicago, Ill.	Salt-free detergent sulfonates made in one step by sulfonation with liquid SO_3 instead of oleum	Plant in operation. Treplow Products, Paterson, N. J., uses similar process.
Detergents, synthetic	Continuous sulfonation	Votator Div., Girdler Co. (Div. of National Cylinder Gas Co.) Louisville, Ky.	In scraped-surface heat exchangers used as reactors, continuous sulfonation of alkyl benzene slurry with oleum gives uniform high activity synthetic alkyl benzene sulfonate detergents.	Girdler Co. handled process development.
Dextran	Enzymatic synthesis		Enzymes are used to form high molecular-weight polymer from sucrose. This eliminates a hydrolysis step.	Developed by USDA
o-Dichlorobenzene	Distillation	Allied Chemical & Dye Corp. Syracuse, N. Y.	Pure ortho is separated from other isomers by fractional distillation, with caustic and ammonia present to neutralise and inhibit corrosive action of impurities.	In pilot-plant operation.
Dimethyl sulfoxide	Catalytic oxidation	Stepan Chemical Co. Chicago, Ill.	Catalytic reaction of methanol and H_2S at 500° F. forms dimethyl sulfide which is condensed, purified by distillation, then oxidized at 120° F. with air using NO_2 as a catalyst. Water-white 99.9% product by vacuum distillation.	Product is a solvent for many gases, including acetylene, with selective solvent action on aromatics, unsaturates, sulfur compounds.
Dimethyl terephthalate	Air oxidation	Hercules Powder Co. Burlington, N. J.	Para-xylene is air-oxidized to toluic acid, esterified with methanol to methyl para-toluate, oxidized further to monomethyl terephthalate, finally esterified to DMT.	$4-million plant in operation in 1955. Capacity: 12 million lb./yr. for ICI Terylene plant at Millhaven, Ont.
Diphenyl mercury		Gallowhur Chemical Corp. Ossining, N. Y.	Series of ionic reactions gives 80–90% yield. Avoids expensive reagents, no separation problems.	Lab. scale. Could make product at $20/lb. on commercial scale.
Esters	Continuous esterification		Acid, alcohol and catalyst recirculate through a coil of Monel tubing (0.055-in. dia., 18 ft. long) until desired conversion is achieved.	Developed by R. C. Canapary of Esso Research & Eng. Co. and P. F. Bruins, Brooklyn Poly.
Fatty alcohols	Catalytic hydrogenation		Without saponification or esterification, fatty acids are hydrogenated directly under high pressure with a dissolved copper-salt catalyst. Process claimed to lose no glycerine, produce no by-products, make C_{12} to C_{20} alcohols.	Batch process, probably suitable for continuous operation, developed by Givaudan-Delawanna, N. Y., offered for license by H. L. Barneby, Columbus, Ohio.
Fatty alcohols	Continuous hydrogenation		Belgian SBA process involves steam hydrolysis of animal or vegetable fat to fatty acids and glycerine, pressure esterification with methanol, catalytic hydrogenation at 400–500 atm., 390–660° F., with methanol recovery, final vacuum distillation to separate desired fractions.	Process being offered in U. S. by Blaw-Knox. Claim overall fatty acid yield of 92%.
Fatty alcohols	Continuous hydrogenation	Sinnova. Toulouse, France	Fatty acids, hydrogen and a nickel-chrome catalyst react in a high-pressure tower type reactor. Products are fractionated, catalyst recirculated. Simpler than usual process.	Process developed by Société d'Innovations Chemique (Sinnova) in France, and used there for 10 yr. Now offered by Rust Engineering, Pittsburgh, in U. S.
Fatty alcohols	Reduction		Metallic sodium is dispersed in an inert solvent; a mixture of fatty compounds and a reducing alcohol is added. Two phases result. The solvent is removed, leaving fatty alcohol. No high pressure equipment or catalysts are needed.	Developed by Ethyl Corp.

AL Stainless Steels
for the Process Industries

VARIOUS TYPES—Generally speaking, stainless steels are divided into three groups: chromium, chromium nickel, and chromium-manganese-low nickel steels. Their corrosion resistance, hardenability, tensile strength, etc., varies with the proportion of chromium, nickel and other alloying elements each type contains.

The chromium stainless grades are divided into two types: martensitic steels, which are hardenable; and ferritic non-hardenable steels. Both types are magnetic. The chromium nickel and chromium-manganese-low nickel stainless grades are austenitic steels, hardenable only by coldworking, and are non-magnetic.

The principal chromium stainless steels of chemical industry significance are Types 410, 431 and 440A martensitic grades, and Types 405, 430, 442 and 446 ferritic steels. Chromium nickel austenitic steels of principal importance are Types 302, 304, 316, 317, 347, 309 and 310. In the more recently developed chromium-manganese-low nickel austenitic group, Type 202 has physical and mechanical properties closely approximating those of Type 302—with the advantage of much lower nickel content and more ready availability in times of nickel shortage.

PRINCIPAL GRADES—Industry has called for quite an extensive range of chemical and physical properties in stainless steels. To meet these requirements, types have been developed which are best suited for a particular application: such as Types 316 and 317 for extra corrosion resistance, Types 309 and 310 for extra high temperature service, etc. Knowledge of these stainless steel qualities is essential for engineers and designers to create a product that will best do the work for which it was intended. Complete data on AL Stainless Steels is available in the various publications listed below.

Of all the stainless steels, the grades most used in the chemical and allied industries are Types 304, 316, 317 and 347 chromium nickel steels. The first three grades are also available in extra low carbon varieties to meet extreme conditions of fabrication or service which might carry the threat of intergranular corrosion. Designated Types 304L, 316L and 317L, these low carbon stainless steels are practically immune to carbide precipitation in the as-welded condition. Like Type 347, they permit the field-welding and stress-relieving of material of any thickness, for example, without the hazard of intergranular corrosion.

REGULARLY SUPPLIED FORMS—Allegheny Ludlum Steel Corporation is in position to furnish the various grades of stainless steel in all of the commercial forms required by fabricators of these metals. These include:

- Plates, including formed heads
- Sheets, either coiled or straight cut lengths
- Strip, either coiled or straight cut lengths
- Bars, rounds . . . flats . . . hexagons . . . octagons . . . squares or special shapes
- Billets, for forging or upsetting
- Angles
- Wire
- Tubing, seamless or welded
- Castings and smooth-hammered Forgings
- Extrusions
- Clad stainless

Information as to size ranges and mill tolerances are available in literature devoted to detailed discussions of AL Stainless Steels.

SPECIAL REQUIREMENTS—When selecting a grade of corrosion and heat resisting steel for a given application, it should always be borne in mind that laboratory tests, however carefully performed, can be expected at best to be only indicative of field performance. Variations in actual service conditions are so wide that a special study of the case at hand may be necessary at times. To that end, Allegheny Ludlum engineers and technical men are available for consultation on unusual problems involving stainless applications.

FABRICATION—AL Stainless Steels may be easily fabricated by any of the usual processes—welding, drawing, blanking, machining, spinning, forging, riveting, shearing, soldering, etc. In some instances, however, care must be exercised in handling of the material to preserve its corrosion or heat resisting properties. No one should undertake to fabricate any of the stainless steels without a full understanding of these handling procedures. Proper processing is fully discussed in Allegheny Ludlum literature—available on request.

RESISTANCE TO ATTACK—There is a wide range of conditions under which AL Stainless Steels operate in resisting corrosive attack at normal and elevated temperatures. Detailed information regarding their resistance to various media, heat resistance and strength will be sent upon request. See the publication list below.

STAINLESS CLAD STEEL—Allegheny Ludlum Stainless Clad is available commercially in the following commodities:

- Double Clad—Stainless both surfaces with carbon steel core. In plates, sheets and strip.
- Single Clad—Stainless one side only; plates only 3/16" and heavier.

Special clad materials on application.

PUBLICATIONS AVAILABLE

The following list of technical and service literature is freely available on request; just ask for the bulletins which contain the type of information you need.

Blue Sheets—An individual Blue Sheet, containing certified laboratory data on physical and chemical properties, etc. is available on each grade of AL Stainless Steel.

Fabrication of Stainless Steels—Contains valuable data for your shop men on various methods of handling, forming and finishing stainless steel.

AL Stainless Steel in Chemical Processing—36 pages on various applications, advantages, etc. of stainless in the chemical industry.

Stainless Steel Handbook—A case-bound book of 124 pages, containing complete data leading to the proper selection and fabrication, etc. of the correct grade of stainless for each application.

● Write to *Allegheny Ludlum Steel Corporation, Oliver Bldg., Pittsburgh 22, Pa.*

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For Stainless Steel in ALL Forms—call

Allegheny Ludlum

Warehouse stocks carried by all Ryerson Steel plants

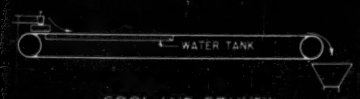
AL STAINLESS STEEL

FINE ORGANICS, continued

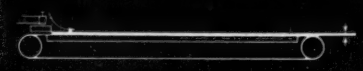
PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Furfural	From waste sulfite liquor	Brown Co. Berlin, N. H.	Exploring possibility of economic recovery of furfural.	Pilot plant in operation. If feasible, Brown plans large furfural plant.
Gamma globulin	Blood separation	Armour & Co. Kankakee, Ill.	Process depends on close control of temperature and concentrations. Blood is centrifuged; then plasma is treated with alcohol and buffers in five precipitation steps.	Process is in use.
Hydrocarbon sulfonates	Continuous sulfonation	Chemithon Corp. Seattle, Wash.	Process sulfonates alkanes in 13 min. Plant is cheap, compact. Mixing of reactants occurs in special modified centrifugal pump.	Developed in cooperation with Oronite Chemical Co. In pilot-plant stage.
Isophthalic acid	Vapor-phase oxidation	Standard Oil Co. of Calif. Richmond, Calif.	Now building first commercial plant to make this chemical intermediate—up to 50 million lb./yr.	Operation due late 1955, will use effluent from adjacent p-xylene plant.
Itaconic acid	Fermentation	Chas. Pfizer & Co. Brooklyn, N. Y.	Molasses plus nutrients is fermented with *Aspergillus terreus* in agitated air-blown deep fermentor. Broth filtrate is evaporated, crystallized, carbon treated, refiltered and recrystallized.	Plant operating; uses in resins, plastics, fibers, plasticizers, and lube oil additives are being explored.
Levulose	Fermentation	Pfanstiehl Chemical Corp. Evanston, Ill.	New process selectively ferments any disaccharide. In practice, glucose is fermented and optically active levulose is isolated in pure form.	1,500 lb./mo. plant in operation. Present work may bring in a new raw material which will simplify separation process.
Lysergic acid	Synthetic	Eli Lilly & Co. Indianapolis, Ind.	Process starts with indole propionic acid, goes through 14 reactions.	Demonstrated in laboratory.
Mesitylene	Cracking acetone	University of Texas. Austin, Tex.	Continuous flow preparation of mesitylene by catalytic condensation of acetone gives 21.3% yield. Uses natural bauxite catalyst.	Experimental process.
Methyl and dimethyl styrenes	Cracking of diaryl ethanes	American Cyanamid Co. Stamford, Conn.	Toluene or xylene is reacted with acetylene or acetaldehyde; resulting diaryl ethane is catalytically cracked to yield substituted styrene plus toluene or xylene.	Under pilot-plant investigation.
Methyl mercaptan	Hydrosulfurization	Union Oil Co. of Calif. Brea, Calif.	Reaction at 70° C. and 175 psig. of methyl chloride with sodium hydrosulfide in excess H_2S gives 87 mole % of methyl mercaptan per pass.	Pilot unit so far.
Methyl taurine	Continuous	General Aniline & Film Corp. Linden, N. J.	Sodium isenthionate and methyl amine are fed continuously into reactor at elevated temperature and pressure. Product goes to evaporator for removal of water and unreacted amine.	In operation as part of detergent manufacture.
Oxygenated hydrocarbons	Air oxidation	University of Texas. Austin, Tex.	Maximum yield conditions determined for the vapor phase air oxidation of cyclohexane with and without metal catalysts.	Laboratory process only.
Pentaerythritol trinitrate	One-step nitration	U. S. Navy, Allegany Ballistics Laboratory Cumberland, Md.	One-step mixed-acid nitration of pentaerythritol gives high yields of trinitrate plus tetranitrate.	Process is under security wraps.
Phthalic acid	Two-stage oxidation	Richfield Oil Co. Watson, Calif.	Process oxidizes petroleum xylene fractions with air in presence of cobalt soap catalyst. First step at moderate temperature and pressure (300°F.) removes ethyl benzene impurity as acetophenone. Second more severe stage oxidizes toluic acids from first stage.	Process developed at Stanford Research Institute is operating on semi-commercial basis.
Pinane hyperperoxide	From gum turpentine	.....	Improved, economical method is claimed for production of pinane hyperperoxide from gum turpentine.	Developed by USDA at Olustee, Fla., and announced Jan., 1954.
Polyurethanes	From isocyanates	Various	Reaction of diisocyanates with polyesters produces polyurethanes in various forms, such as foams, adhesives, rubber, protective coatings.	Du Pont, Mobay and Allied are boosting isocyanate capacity to supply a large number of polyurethane producers.
Potassium acid saccharate	Nitric acid oxidation of dextrose	.....	4-hr. oxidation at acid-dextrose ratio of 3 to 4 gives 43% yield of 98 to 99% pure saccharate.	Developed by USDA, Northern Regional Research Lab., Peoria, Ill. Pilot plant successful.
Pyridine	Catalytic	.....	This is a vapor-phase reaction of gaseous ammonia and acrolein over an activated silica-alumina catalyst. Resin formation is avoided by forming acrolein directly in the reaction zone from acetaldehyde and formaldehyde. Operating temperature is 360° C.; yields are about 50%.	Developed at Polytechnic Institute of Brooklyn. Studies carried out in 19-mm. borosilicate glass tubing.
Rhodinol	Photochemical	Shulton, Inc. Clifton, N. J.	Citronellol, out of presence of air, is isomerized by exposure to ultra-violet light at 235° C. for 12–24 hr. Product is recovered by fractionation.	Process is simple, has much higher yield (65–80%) than previous synthetic processes. In commercial operation.

Some of the functions that have been successfully performed by Sandvik Conveyors

WITH A SANDVIK WATER-BED CONVEYOR YOU CAN:

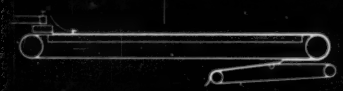


COOL AND CONVEY

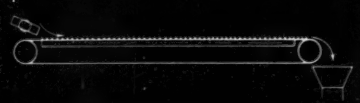


REGULATE THICKNESS WHILE COOLING (ANY THICKNESS UP TO 1" CAN BE COOLED)

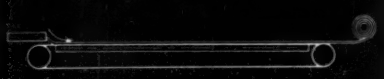
CUT MATERIAL TO DESIRED SIZES WHILE COOLING



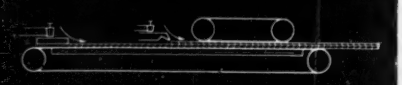
COOL AND STRIP OFF GELATINOUS MATERIALS IN SHEET FORM



COOL LOOSE AND PULVERIZED MATERIALS



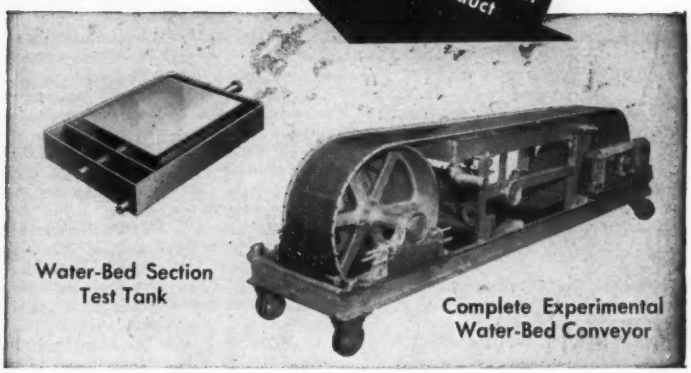
COOL SOLIDS IN SHEET FORM



COOL MATERIAL IN LAYERS

HOW CAN SANDVIK'S CONTINUOUS STEEL-BELT COOLER *Improve YOUR production?*

HERE ARE TWO WAYS To "Pre-Test" Sandvik's Steel-Belt, Water-Bed Conveyor With Your Own Product



Water-Bed Section Test Tank

Complete Experimental Water-Bed Conveyor

With one of these experimental units you can find out how Sandvik's patented water-bed conveyor can make your processing more automatic.

A small scale trial in your plant will enable you to determine cooling rates and other pertinent data. You will see for yourself the extraordinary cooling capacity of this conveyor combined with the advantages of the steel belt.

How The Water-Bed Conveyor Operates—The loaded steel band "floats" along on an open trough of circulating water. The water pressure assures 100% coolant contact with the belt. The trough is so designed that no water can get on top of the belt.

Experimental water-bed units are available on request. Sandvik's engineering department will help you decide which test unit is best suited for your purpose. Write, wire or 'phone for complete details.

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SANDVIK STEEL BELT CONVEYORS

SS-64

FINE ORGANICS, continued

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Riboflavin, soluble...	Fractional crystallization	Hoffmann La Roche, Inc... Nutley, N. J.	New process reacts USP riboflavin with dichlorophosphoric acid and diethanolamine. Successive fractional crystallizations produce pure DEA salt which is converted to Na salt, then dried.	Twice as costly as USP ribo, but advantages of unaided solubility offset added expense.
Saccharin.....	Synthesis.....	Maumee Chemical Co..... Toledo, Ohio	Eight-step synthesis from phthalic anhydride makes no byproducts, requires no isomer separation. Process goes through phthalamide, anthranilic acid, diazo anthranilic acid, sodium dithio dibenzoate, dithio dibenzoic acid and its dimethyl ester, o-sulfonyl chloride benzoic acid ester, to saccharin.	New process, operating under several new patents, is economic in itself, but also makes available several saleable intermediates including phthalamide, potassium phthalamide, anthranilic acid, dithio dibenzoic acid, thiosalicylic acid and dimethyl ester.
Sorbic acid.....	Synthetic.....	Union Carbide & Carbon Corp.	Used as an antimold agent in cheese, meat, pickles and other foods.	UCC is considering building a new plant.
Sulfonates.....	Direct sulfonation..	Various.....	Stabilized liquid SO_3 being used increasingly instead of oleum for various sulfonations, e.g., alkyl-aryl sulfonates for detergents.	Processes are tricky but yield salt-free products and have other advantages. Users contemplating possible continuous processes.
Tetracycline.....	Fermentation.....	Several.....	New fermentation processes developed for manufacture of tetracycline.	Among makers are Pfizer, Lederle, Bristol-Myers.
Trifluoroacetic anhydride	Dehydration.....	Minnesota Mining & Mfg. Co. St. Paul, Minn.	As a catalyst for esterification, TFA anhydride goes to the acid. Anhydride can be recovered by reacting acid with stabilized sulfur trioxide.	.....
Vaccine.....	Sound wave treatment	Sharp & Dohme..... Philadelphia, Pa.	Process makes whooping cough vaccine by disintegrating whooping cough germs with high-frequency sound waves.	.....
Vanillin.....	Lignin oxidation....	Ontario Paper Co..... Thorold, Ont.	Lignin-containing sulfite liquor is oxidized in presence of lime, with 6–8% yield. Compared with usual alkaline oxidation (NaOH), no recovery of lime is needed.	Process operates on effluent from company's sulfite-liquor-to-alcohol plant. Product recovered by continuous countercurrent extraction with toluene.
Vinyl chloride.....	Fluidized bed.....	.....	A fluidized catalyst bed (mercuric chloride on carbon carrier) adapted for making vinyl chloride. Bed temperatures can be closely controlled and maintained uniformly—eliminating hot spots.	Developed at Purdue University. Studies carried out in jacketed 2-in. iron pipe.
Vitamin A.....	Synthetic.....	Eastman Kodak Co..... Rochester, N. Y.	New synthesis route can produce single, unmixed stereoisomers of Vitamin A, eliminating costly separation steps.	Process still in laboratory stage.
Vitamin B_{12}.....	Extraction from sewage	Milwaukee Sewerage Commission Milwaukee, Wis.	Dried sewage fertilizer product (Milorganite) is leached with water to remove vitamin B_{12}. Extract is evaporated and spray dried to get animal feed concentrate.	In pilot-plant stage. Developed by Vern E. Alden Co., Chicago.
Wax.....	Extraction.....	Soyo Co..... Wilson, Ark.	Process to be operated on pilot scale to study removal of high quality wax, tanning agents and other products from Douglas fir bark.	M. W. Kellogg Co. optioned process from Oregon Forest Products Laboratory.

• Heavy Organics

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Acetaldehyde.....	Catalytic.....	Montecatini Co..... Novara, Italy	Process converts acetylene catalytically to acetaldehyde by reaction with water. Novel feature is that no effort is made to remove CO_2 from acetylene made by partial oxidation of natural gas.	In U. S. a similar process is used by Carbide & Carbon, but it has been believed necessary to use 99.5% pure acetylene. Process pilot planted with 33 tpd. plant due for operation late 1955. Methanol will be co-product.
Acetic anhydride....	Acetone cracking...	Courtaulds, Ltd..... Coventry, England	Acetone derived from cheap petrochemical isopropyl alcohol is cracked to ketene which, dissolved in acetic acid, gives acetic anhydride.	Trick is to inhibit dehydrogenation of isopropyl in cracking by adding very small amounts of carbon bisulfide. Yields run over 80%.
Algae animal feed....	Continuous.....	.....	Process is ten times faster than previously reported algae cultivation methods. Product could compete with present poultry feed supplements.	Developed by Basic Research Corp. Still in lab stage.
Algae animal feed....	Photochemical.....	University of California Richmond, Calif.	Pilot plant testing process of converting city sewage to high-protein green algae. After two days algae growth is maximum.	Yield of algae is about 1,000 lb. per million gal. of sewage. Product is centrifuged, pasteurized and dried for feed.
Benzene.....	Beta-ray bombardment of acetylene	General Electric Co.....	At 26° C. about 5 molecules of benzene are produced per 100 e.v. Cuprene is byproduct.	Very preliminary work.
Benzene.....	Catalytic reforming.	Atlantic Refining Co..... Philadelphia, Pa.	Have developed conditions for maximum production of benzene from cyclohexane and methylcyclopentane over catforming catalyst.	Pilot plant operation.

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Cane sugar.....	Continuous diffusion	Fellsmere Sugar Producers Assn. Fellsmere, Fla.	Although diffusion is standard method for extracting sugar from beets, cane sugar has depended on crushing of cane. New process, tried out in 150 tpd. (of cane) mill, shows higher recovery, higher purity. Extraction of cane chips is counter-current by hot water in agitated tower.	Process developed by National Cylinder Gas Co., Chicago, is offered in sizes from 150 to 1,500 tpd. cane, with 97% recovery guarantee, expectation of 99% recovery.
Cane sugar.....	Electromembrane purification	Hawaiian Commercial & Sugar Co. Maui, T. H.	Cane juice is desalted with electrolytic ion exchange membranes. Salt removal increases sugar recovery.	In pilot-plant stage. Use Ionics membranes.
Cane sugar.....	Ion exchange purification	Layton Sugar Co..... Layton, Utah	Ion exchange has for several years been used in beet sugar bleaching. Now Layton has proved the process for cane sugar, replacing bone char decolorization.	Ion exchange claimed to give higher yield and purity at lower cost with much less space for equipment, much lower capital cost.
Chemical cotton.....	Continuous digestion	Hercules Powder Co..... Hopewell, Va.	Digestion carried out continuously on moist fibers rather than slurry of fibers. Gives higher yield, less space, lower operating cost, much shorter time.	Process working at 300 tpd. rate, giving better uniformity than batch process.
Chlorinated organics.	Modified Deacon...	.....	Improved copper catalyst permits chlorination with HCl at 245–250° C.	Lab research done at Fenn College.
Coal carbonization. products	Fluidized carbonization	.....	Crushed coal is charged to a fluidized bed in a preoxidizer, where it is devolatilized and dried at 700–800° F. This then is carbonized at 800–1,200° F. in a carbonizer. Steam maintains the temperature. Yields are 22–27 gal. tar, 3–4 gal. light oil, 1,300–1,450 lb. char per ton of coal.	A pilot-plant is in operation at Schuylkill Station of Philadelphia Electric. Capacity is 2 tpd. Developed by United Engineers & Constructors, Philadelphia.
Coke.....	Contact coking.....	Pittsburgh Consolidation Coal Co. Library, Pa.	Moving bed process works with bituminous coal and petroleum feed stock. Applications seen in other fields.	.....
Fuels, liquid.....	Coal hydrogenation.	.....	A one-step coal hydrogenation process for making fuels. Carried out at 500–525° C. and high pressures in the presence of nickel, tin or molybdenum catalyst. Result is a distillable oil, without coke or asphaltene formation.	Developed by Natural Bureau of Standards. Bench-scale status.
Fuel gas.....	Underground coal gasification	Alabama Power Co..... Gorgas, Ala.	Tests are trying out hydraulic fracturing of underground coal beds instead of electro-linking previously tried. Technique borrowed from oil well technology.	Joint venture with Bureau of Mines, Sinclair Coal and Stanolind. Fracturing process known as Hydrofrac.
Formaldehyde.....	Catalytic oxidation.	Reichhold Chemicals, Inc.. Seattle, Wash.	Methanol is oxidized with air in presence of a new catalyst consisting of a mixture of metal oxides.	Investment much less than for conventional plant. Para-formaldehyde formation is eliminated. Plant is practically automatic. No distillation is required for purification of product.
Glycerine.....	Synthetic.....	Shell Chemical Corp..... Norco, La.	Process details withheld, but entirely new synthesis will be used, combining H_2O_2 (from a non-electrolytic process) with acrolein. Needs no chlorine.	Plant will turn out 30 million lb./yr. H_2O_2. Process may involve liquid-phase oxidation of isopropanol (ex propylene) to make H_2O_2; catalytic oxidation of propylene to acrolein; combination of H_2O_2 and acrolein to glyceraldehyde, which is hydrogenated.
Hydrocarbon sulfonates	Alkylation-sulfonation	Universal Detergents, Inc. Los Angeles, Calif.	Aromatic petroleum derivatives are alkylated and sulfonated in a single step.	In commercial operation, 25 tpd.
Leather.....	Secotan.....	Eagle Ottawa Leather Co.. Grand Haven, Mich.	Completely automatic machine tans leather in minutes, compared with weeks or months conventionally.	Being tested commercially.
Maleic anhydride....	Solvent absorption..	.....	Anhydride is recovered from converter gases by absorption in dibutyl phthalate, followed by reduced-pressure distillation. Equipment can be used interchangeably for phthalic anhydride production.	Plant underway in Europe. Process developed by Scientific Design Co., New York.
Methyl styrene.....	Diaryl ethane.....	American Cyanamid Co... Fortier, La.	Toluene and acetylene form ditolyl ethane, which is cracked to ortho and para methyl styrenes and toluene.	$5 million plant under construction to make 40 million lb./yr.
Oxygenated chemicals	Modified Fischer-Tropsch	.....	Synthesis gas is bubbled through a slurry of nitrided iron catalyst. Yield of oxygenated chemicals is several times that obtained with reduced iron catalyst.	Developed by U. S. Bureau of Mines.
Pentachlorophenol...	Two-stage chlorination	Reichhold Chemicals..... Seattle, Wash.	Trichlorophenol is reacted with free chlorine in presence of catalyst. Off-gases are scrubbed with phenol, making trichlorophenol which recycles to process. Pentachlorophenol yield is 95%. Cl_2 is recovered from HCl.	Process piloted since 1947. 6 million lb. plant started production 1955.
Starch, oxidized.....	Electrolytic.....	Aktiengesellschaft A. Hering Nurnberg, Germany	Water slurry of starch with 5% NaCl is electrolyzed in diaphragmless cell producing NaOCl which decomposes, producing nascent oxygen.	Process pilot planted.

HEAVY ORGANICS, continued

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Synthesis gas	Nuclear reactor		Pulverized coal, steam and oxygen would be piped through nuclear reactor at 2,000–3,000° F. to make synthesis gas. Silicon carbide would probably be used for the reactor tube.	Proposed by U. S. Bureau of Mines.
Trinitrotoluene	Continuous		Process reduces hazards of TNT production. Only 1/25 as much explosive present in process at any one time as in a batch plant of the same daily capacity.	Developed by J. Meissner in Germany.
Vinyl acetate	Acetylene-less	Celanese Corp. of America Pampa, Tex.	New process, details not disclosed. Uses no acetylene.	Plant in operation, capacity 30 million lb./yr.
Vinyl chloride	Catalytic		A complex salt of mercury and barium chloride is used to catalyze reaction of acetylene and HCl to vinyl chloride. Process can use a gas containing only 10% acetylene.	Developed by University of Texas. Process only bench scale so far.
Wood preserving	Double diffusion		Posts are treated first with copper sulfate solution, then with a sodium chromate solution. The two chemicals diffuse up into the wood, then react to form copper chromate—which is toxic to fungi and insects.	Developed by Forest Products Laboratory, U. S. Dept. of Agriculture, Madison, Wis.
p-Xylene	Continuous fractional crystallization	Phillips Chemical Co. and Coeden Petroleum Corp. Big Spring, Tex.	Continuous process developed by Phillips is first to make 95% pure or better p-xylene in commercial quantities.	5 million lb./yr. plant now supplying tank car quantities to Du Pont at Gibbstown, N. J., for oxidation to terephthalic acid (for Dacron).
p-Xylene	Fractional crystallization	Standard Oil Co. of California (Calif. Research Corp.) Richmond, Calif.	Selective reaction of CCl_4 with para-xylene (but not with meta or ortho) forms solid compound, permits easy separation from meta-xylene. Recovery of pure meta is also high.	Demonstrated in lab. No commercial plans announced.
p-Xylene	Hydroforming	Standard Oil Co. (Ind.) Whiting, Ind.	Certain petroleum fractions converted to mixed aromatics by hydroforming. Mixture separated to recover p-xylene and benzene.	Plant started operation Jan. 1955; was designed to produce 14 million lb./year

• Inorganics

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Alumina	Electrolytic	Lobeth Corp. Chicago, Ill.	Low-alumina clay is pulverized, kilned at 2,200° F., slurried with H_2SO_4, purified of iron and copper, and resulting aluminum sulfate is electrolyzed to recover H_2SO_4 and aluminum hydroxide. Latter compound is then calcined to alumina.	Lobeth claims process, pilot-planted in Italy, produces alumina at about two-thirds cost of Bayer process alumina from bauxite. Is offering licenses.
Alumina trihydrate	Combination Bayer-sinter	Reynolds Metals Co. Louisville, Ky.	Organic-free product is made from sodium aluminate produced by dry reaction at elevated temperature to burn away organic material. Then organic-free hydrate is precipitated.	New product can be used to make whiter aluminum chemicals, e.g., iron-free alum.
Ammonium chloride	Pelletization	Canadian Industries Ltd. Hamilton, Ont.	Close control of crystal size is achieved by pelletizing dry ammonium chloride, followed by roll crushing. Replaces slow crystallization process.	In commercial operation.
Beryllium chloride	High-intensity arc	Light Metals Refining Corp. New York	Experimental process uses 20,000°F. high-intensity electric arc as used in military searchlights (c.f., 6,000° F. for ordinary arcs), sprung between electrodes of carbon and beryllium ore, in chlorine atmosphere.	Power needs low—3–6 kwh./lb. $BeCl_2$. Expect eventually to use high-intensity arc for other purposes, e.g., acetylene, nitric acid, organo-metallics, other metal chlorides. Sheer-Korman process.
Boiler feedwater	Seawater evaporation	Pacific Gas & Electric Corp. Morro Bay, Calif.	Triple-effect evaporation of seawater supplies feedwater makeup for power plant.	First industrial use in U. S. of seawater distillation.
Calcium carbide	Continuous		Continuous flat-bed electric furnace makes higher purity calcium carbide with less consumption of power and labor than conventional process.	Furnace design by M. J. Udy. Pilot installation (500 kw.) at Battelle Memorial Institute, Columbus, O.
Calcium hydride	Indirect	Metal Hydrides, Inc. Beverly, Mass.	Reaction of calcium chloride, sodium and hydrogen produces fine powder containing 25% of highly reactive calcium hydride.	Powdered product offers certain advantages over older lump product, made directly from calcium and hydrogen.
Carbon bisulfide	Methane-sulfur	Food Machinery & Chemical Corp. Charleston, W. Va.	Reaction between methane and sulfur takes place in radiation-type furnaces.	Plant in operation, first to use this process.
Carbon dioxide purification	Hot K_2CO_3 solution scrub	U. S. Bureau of Mines Bruceton, Pa.	Shows definite savings over the monomethanolamine process.	Pilot plant study.

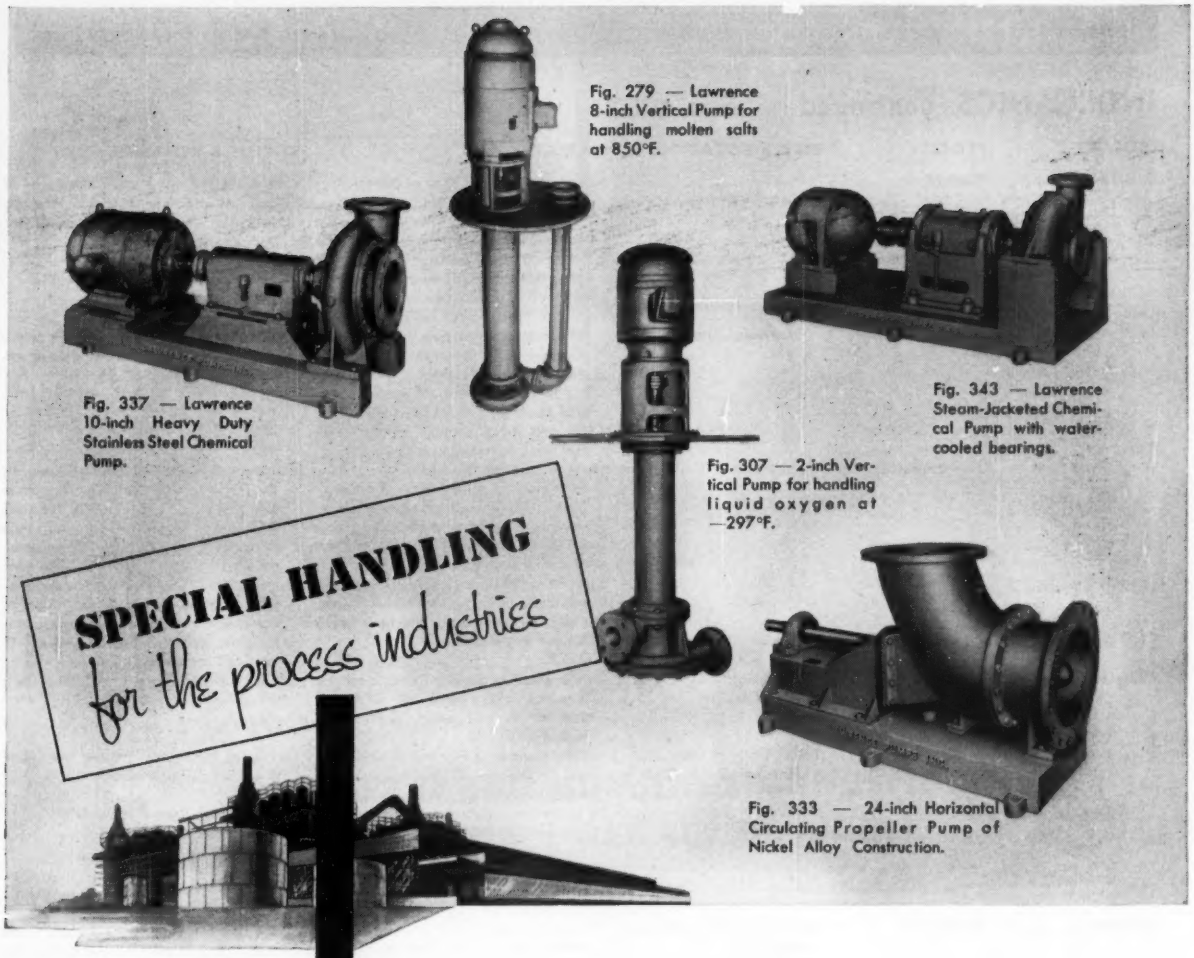

Fig. 279 — Lawrence 8-inch Vertical Pump for handling molten salts at 850°F.

Fig. 337 — Lawrence 10-inch Heavy Duty Stainless Steel Chemical Pump.

Fig. 307 — 2-inch Vertical Pump for handling liquid oxygen at —297°F.

Fig. 343 — Lawrence Steam-Jacketed Chemical Pump with water-cooled bearings.

Fig. 333 — 24-inch Horizontal Circulating Propeller Pump of Nickel Alloy Construction.

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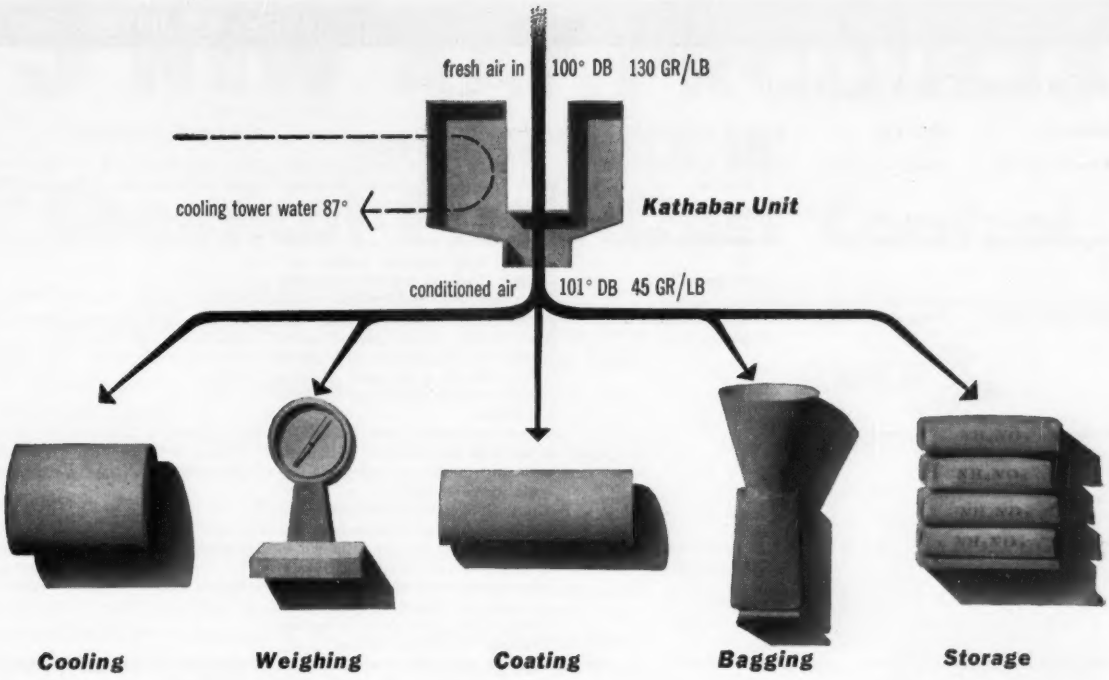
INORGANICS, continued

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Caustic-chlorine	Electrolytic		New electrolytic cell bank of 60,000 amp. capacity takes only 50 in. x 36 in. floor space, 36 in. high. This bank consists of 20 vertical mercury cells 2 in. thick, taking 40% less mercury than present cells. Cathode is mercury amalgam on fine vertical screen, anodes carbon rods.	Cell developed by Vittorio DeNora, of Italy, is handled in U. S. by Monsanto Chemical Co. as in case of earlier DeNora mercury cell design.
Ceramic coatings	Flame spraying	Norton Co. Worcester, Mass.	Fine powdered metal oxide (alumina, zirconium oxide, titanium oxide, etc.) is mixed with water and an organic material (cornstarch). The plastic compound formed is extruded to form rods 24 in. long and 1/8 in. dia. The dry rod is fed through a metallising gun using oxy-acetylene flame.	Developed by the Norton Co. for depositing a high melting oxide on metal to protect metal from extreme temperatures and erosion.
Ceramic coatings	Flame spraying		Refractory and chemically inert ceramics, fed through a simple flame gun, can be coated onto metals or other bases by technique similar to metallizing. Base is not heated unduly. Builds up layer of sintered refractory oxides.	Process developed by Armour Research Foundation, Chicago, produces coatings effective in protecting base metals against high-temperature erosion. Porosity can be eliminated by overcoating with ARF's solution ceramics.
Ceramic coating	From solution		Solution of refractory oxides is sprayed on surface to be coated; solvent is evaporated, leaving ceramic film molecularly bonded to the surface.	Developed by Armour Research Foundation, Chicago, for licensing. Said to fire at lower temperatures, giving controllable thickness highly resistant to heat and corrosion.
Chlorine	Direct-contact cooling	Velsicol Corp. Memphis, Tenn.	New system for cooling chlorine cell gas is to pass it up a packed tower against first 70° F. well water, then 50° F. chilled water.	Off-gas is dried with sulfuric and liquefied. Off-water is stripped of chlorine with steam.
Chlorine dioxide	From sodium chlorate	Riegel-Carolina Corp. Acme, N. C.	Sodium chlorate is reduced in acid solution. Process is efficient, safe and economical.	Developed by Solvay Process Div., now in commercial operation.
Diamonds	Synthetic		In a chamber, carbonaceous material is subjected to temperatures over 5,000° F., at pressures of 800,000 psi. Diamonds are produced measuring 1/16 in. long. Composition is about 85% carbon, 15% ash.	Developed by General Electric Co
Fluorine	Electrolytic	Carbide & Carbon Chemicals Corp. Oak Ridge, Tenn.; Paducah, Ky.	Cheaper fluorine with doubled cell life claimed for new medium-temperature electrolytic fluorine cell with fewer, wider anodes and polarization minimized by improved electrolyte.	Cells operate at 8–10 v., 3,500–4,000 amp., current efficiency of 90%, electrolyte temperature of 200–220° F. 2 tpd. plant was reported.
Fluorine disposal	Steam reaction, continuous	Carbide & Carbon Chemicals Corp. Oak Ridge, Tenn.	Fluorine is preheated and reacted with superheated steam to form HF. Extremely exothermic reaction is now controllable by cooling walls of reactor.	Although violent explosions were reported in the literature, none have occurred in pilot plant. Monel construction is recommended.
Glass	Electric melting	Northwestern Glass Co. Seattle, Wash.	Older process used carbon electrodes, could make only amber glass. New molybdenum electrodes last much longer, permit flint glass also to be made.	Electric furnace improves glass quality, requires lower capital investment, takes less maintenance than oil or gas-fired furnaces.
Hydrazine	Azeotropic distillation	Olin Mathieson Chemical Corp. Lake Charles, La.	Improved dehydration process for hydrazine hydrate (which can be concentrated only to 70% by simple distillation) involves azeotropic distillation with aniline as the entrainer.	Process developed by Battelle Memorial Institute for Olin Mathieson.
Hydrochloric acid, c.p.	Hydrazine dechlorination		Hydrazine hydrate is added to HCl in storage tank or tank car in proportion to free chlorine present to form HCl and nitrogen.	Developed by Olin Mathieson Chemical Corp. Expected to be useful also for purifying other halogen acids.
Hydrochloric acid recovery	Reduction-oxidation	Tin Processing Corp. Texas City, Tex.	Waste from tin leaching, principally iron chloride and free HCl, is reduced to ferrous chloride with iron turnings, then roasted to yield HCl and saleable iron oxide.	Process solves serious waste disposal problem, recovers 600,000 gal. of 31½% HCl per month.
Hydrogen peroxide	Anthraquinone	Becco Chemical Div., Food Machinery & Chemical Co. Buffalo, N. Y.	Like Du Pont and Solvay, Becco has a new non-electrolytic H_2O_2 process. Probably based on German Pfleiderer process in which 2-ethyl anthraquinone is dissolved in an organic phosphoric acid ester, reduced to hydro derivative, and oxygen blown through to form peroxide, regenerate 2-ethyl anthraquinone.	Du Pont's Memphis plant also believed to use I. G. Farben's Pfleiderer process. Becco now operating. Solvay at Syracuse expected to produce later in 1955.
Hydrogen sulfide	Synthetic	Sherritt Gordon Mines Ltd. Fort Saskatchewan, Alta.	Reactor is charged with solid sulfur, hydrogen is introduced continuously to make hydrogen sulfide for metallurgical uses.	Developed by Girdler Co.



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INORGANICS, continued

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Lithium hydroxide...	Limestone roasting.	American Lithium Chemicals Co.	Process involves direct roasting of lepidolite ore from Southern Rhodesia. Previous use of lepidolite, mainly in Europe, has been small scale.	Plant being built by C. F. Braun & Co. for joint subsidiary of American Potash & Chemical Co. and Bikita Minerals Ltd., producer of the ore.
Manganese dioxide...	Electrolytic.....	Western Electrochemical Co. Henderson, Nev.	Ore leached with sulfuric acid, solution purified with barium sulfide and aeration. New cells feature low current density and labor requirement.	10 tpd. plant now in operation.
Manganese dioxide...	Nitric acid leaching.	Nossen Laboratories, Inc.. Paterson, N. J.	Low-cost process claimed to give high-grade MnO_2. Finely ground ore is leached at 175–190° F. with dilute HNO_3, filtered, evaporated, and decomposed (by heating in air) to MnO_2 and HNO_3.	Pilot plant now operating has 0.5 tph. capacity on 11% Maine ore.
Manganese oxides...	Dithionate.....	.....	Low-grade manganese ores leached in water with SO_2, forming manganese sulfate and dithionate which are precipitated (after filtration of $CaSO_4$) with lime. Resulting hydroxide is sintered to mixture of lower oxides.	Pilot planted at Boulder City, Nev., by Bureau of Mines, using 9.6% Arizona ore. Product is of metallurgical grade.
Manganese salts.....	Ammonia-CO_2 leach	Manganese Chemical Corp. Riverton, Minn.	Roasted low-grade Mn ore is ground to 35 mesh, leached with NH_3-CO_2 solution. Complex manganese ammonium carbonate is thickened, steamed to drive off NH_3, precipitate manganese carbonate, which is centrifuged, dried.	Plant treats 100 tpd. ore, makes 50,000 lb. of very pure manganese carbonate. Expect process to be economical.
Manganous chloride..	Coke fusion.....	Armour Research Foundation Chicago, Ill.	Open-hearth slag is fused with coke and calcium chloride in an arc furnace. Manganous chloride is recovered.	Technically successful but economically unattractive.
Mica.....	Synthetic.....	Mycalex Corp. of America, Clifton, N. J.; Brush Beryllium Co., Cleveland, O.	Ingredients (oxides, fluoride, etc.) are melted in electric furnace, melt is cooled, crushed.	Original process developed by Bureau of Mines. Commercial modifications now in use.
Mica.....	Synthetic.....	Synthetic Mica Corp..... Caldwell Township, N. J.	Mixture of magnesium, aluminum and silicon oxides, with potassium silicofluoride and potash feldspar, is charged to batch resistance furnace. Furnace is dismantled to recover mica after 80 hr. at 2,500° F.	Yield from this Bureau of Mines process is about 50% plate mica. Mica powder recycles, gives 95% overall yield. Commercial operation at 1,000 tons/year.
Mica sheets.....	Jet splitting.....	Integrated Mica Corp..... Woodmere, N. Y.	High-velocity water jets split mica into thin flakes, which are formed into sheets.	Plant being built in Belgium to use this process.
Phosphoric acid.....	Prayon process.....	Smith-Douglass Co..... Streator, Ill.	Guaranteed yield is 95% of P_2O_5 entering. Leach temperature is controlled by evaporative cooling. Special horizontal rotary tray filter removes byproduct gypsum with minimum washing losses.	Developed in Belgium, Prayon process is engineered and installed in U. S. by Singmaster & Breyer. Claim 32% acid from sulfuric of only 55%.
Phosphoric anhydride	Phosphorus oxidation	Virginia-Carolina Chemical Corp. Charleston, S. C.	Metered stream of molten phosphorus is burned in dry air. Phosphoric anhydride (anhydrous P_2O_5) is condensed in "barns."	Plant in operation.
Phosphorus pentasulfide	.....	Victor Chemical Co.....	New process, involving distillation, makes light-colored product, used largely in oil additives.	In production.
Pickle liquor disposal	Partial air oxidation	Various.....	Process developed by A. O. Smith Corp. and Eimco Corp. involves making neutralization product filterable by 2–5% air oxidation of gelatinous ferrous hydroxide. Air is blown into reaction mix during lime neutralization.	Retention time of 15 min. is enough for desired oxidation. Sludge readily dewatered on disk filter. Claim better results, lower costs than other disposal methods.
Polyphosphates.....	Conventional.....	Shea Chemical Co..... Jeffersonville, Ind.	Equipment improvements overcome disadvantages of older processes. Phosphorus burner is large carbon "Quonset hut," with good cooling water distribution. Pre-reaction of soda ash and part of acid eliminates foam problems.	Plant produces 80,000 tons/yr. of H_3PO_4, makes Na tripolyphosphate, tetra Na pyrophosphate, food-grade acid.
Polyphosphates.....	Conventional.....	Virginia-Carolina Chemical Co. Fernald, Ohio	Equipment improvements have overcome main objections to older process, including stainless steel phosphorus burner, water-jacketed packed P_2O_5 hydrator, simplified continuous reactor for H_3PO_4 and soda ash.	Design gives high acid recovery in hydrator, eliminates Cottrell precipitator, gives complete recovery of P_2O_5.
Potassium nitrate....	Extraction from seawater	Norsk Hydro, Mekog..... Ijmuiden, Holland	Dipicryl amine reacts with K salts to form a precipitate, which is filtered out and dissolved with nitric acid to form KNO_3 and regenerate amine.	Pilot plant will make 1,050 tons/yr.
Potassium sulfate....	Modified Hargreaves	Potash Co. of America.... Dumas, Tex.	Briquetted KCl is treated countercurrently in chambers with SO_2, air and water vapor, producting product with less than 2% chloride. Recovery exceeds 95%.	Byproduct HCl is recovered as 20 Be. solution for oil well acidising.

3 NEW AAF PRODUCTS
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Chemical Plant Dust Control

1 AMERclone Dry Centrifugal Collector designed to handle large exhaust volumes containing dry, granular dust in large concentrations. Strictly a product of AAF research, AMERclone offers many features new to dry centrifugal design that result in these important advantages—

High Collection Efficiency. AMERclone offers collection efficiencies equal to or better than any centrifugal unit available today.

Requires Less Space. The fact that a single AMERclone tube, 4" in diameter, has a cleaning capacity of 333 cfm as compared to a 100 to 150 cfm rating for conventional units makes for important space savings.

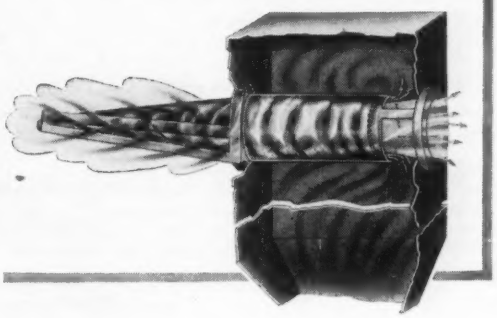
Less Subject to Abrasion. Abrasion resistance qualities are greatly increased with the use of thick wall gray iron castings, plus the fact that in AMERclone operation there is no recirculation of dust load to increase abrasive effect.

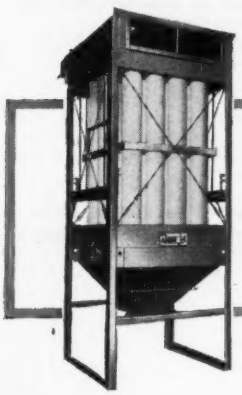
Maintains Efficiency. Collection efficiency of the AMERclone remains practically constant over a wide range of exhaust volumes with the compensating feature of the secondary air circuit.

For complete AMERclone data, write for AAF Bulletin No. 291.

AMERClone

DRY CENTRIFUGAL COLLECTOR





AMER Jet

FABRIC ARRESTER

2 AMERjet Fabric Arrester designed to handle extremely fine particles or collect material dry for reclaiming. Like all AAF Dust Control Products, AMERjet offers these basic features: **(1) small space requirements; (2) maintained performance over a wide range of operating conditions; (3) constant exhaust volume; (4) high collection efficiency.**

For complete AMERjet data, write for Bulletin No. 279.

3 Design 4 Type N ROTO-CLONE Hydro-Static Collector —A new version of AAF's famous Hydro-static precipitator which, in addition to the proven high efficiency cleaning action of its inverted S-shape water curtain, now offers—

- Improved and simplified entrainment separators to further reduce unit's low maintenance costs.
- Addition of 4 larger sizes to permit handling of exhaust volumes up to 50,000 cfm.
- Improved water level control maintains performance under extremes in operating conditions.

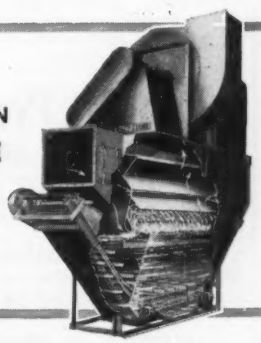
For complete Type N data, write us for AAF Bulletin No. 277.

DESIGN 4 TYPE N

ROTO-CLONE

HYDRO-STATIC

COLLECTOR



AAF

American Air Filter

COMPANY, INC.

American Air Filter of Canada, Ltd., Montreal, P. Q. • 326 Central Avenue, Louisville 8, Kentucky

INORGANICS, continued

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Radioactive waste concentration	Ion exchange.....	Argonne National Laboratory Lemont, Ill.	Electromigration through two ion exchange membranes decontaminates aqueous solutions. Power cost is less than for vapor recompression distillation.	Process proposed, based on experimental data.
Rare earth salts.....	Ion exchange.....	Lindsay Chemical Co..... West Chicago, Ill.	First commercial use of ion exchange to purify crude mineral mixtures. Purities up to 99% are possible. Plant head feed rate is 50 lb./day.	Process patterned on one developed at Iowa State College, but replaces only purification steps of Lindsay process, other steps remaining chemical.
Salt.....	Fluidized drying....	Carey Salt Co..... Hutchinson, Kan.	Salt is dried, at 5 tph., from initial 3% to 0.03% moisture in fluidized bed by hot gas from burning natural gas. Fluidized cooling follows drying.	Dryer developed by Combustion Engineering. Report fuel cost saving of two-thirds, compared with kiln drying. Labor is reduced, power no higher.
Salt cake.....	Natural brine cooling	West End Chemical Co... Searles Lake, Calif.	Company produces soda ash and borax from Searles Lake brine, leaving a residue containing Na_2SO_4. Further chilling from 60° to 45° F. forms $Na_2SO_4 \cdot 10\ H_2O$ crystals which are classified, separated and evaporated to anhydrous form.	Special patented evaporator is used to overcome trouble from inverse solubility of Na_2SO_4.
Silica.....	Combustion of $SiCl_4$	Dow-Corning Corp..... Midland, Mich.	Dow-Corning reportedly produces fine silica powders in 4–25 millimicron range by German Degussa process, burning vaporized $SiCl_4$ and hydrogen in air.	Dow said to make 30 tons/month. Godfrey L. Cabot reported building similar plant.
Soda ash.....	From trona.....	Intermountain Chemical Co. Westvaco, Wyo.	Solid trona is mined underground, brought to surface, processed to soda ash by crushing, dissolving, removing impurities, evaporating, crystallizing, centrifuging and calcining.	$18-million plant in operation. Capacity 300,000 tons/yr.
Soda ash.....	Wet handling.....	Union Bag & Paper Corp. Savannah, Ga.	Bulk soda ash is handled and stored as a solution or slurry. Eliminates dusting problems.	Facilities installed late 1953. Method developed in cooperation with Olin Mathieson Chemical Corp.
Sulfur.....	Autoclaving ores...	Texas International Sulphur Co. San Felipe, Baja California, Mex.	Claimed to be first mine in North America to produce commercial sulfur from surface ore.	Plant operating Spring 1954.
Sulfur.....	Pyrites distillation..	Noranda Mines, Ltd..... Hamilton, Ont., Canada.	Plant, often reconsidered, went into operation late 1954, making sulfur from pyrites by roasting with restricted air to distill off half the sulfur. Completion of roasting gives SO_2.	Plant gets 62 tpd. sulfur, 240 tpd. SO_2, 252 tpd. iron oxide sinter from 370 tpd. pyrites. SO_2 goes to acid in an adjoining plant.
Sulfur.....	Solvent extraction..	American Sulfur & Refining Co. Sulphurdale, Utah	$1.1 million plant completed to produce 100 tpd. sulfur from low-grade surface ores. Uses an aromatic solvent extracted from petroleum. Solvent takes up sulfur at 200° F., drops it at 70–80° F.	Process, used for first time, is based on a 1940 patent of Standard Oil Development Co. (now Esso Research & Eng. Co.). Produces 99.7% S from 20% ore.

About Previous Inventories . . .

For projects not listed in this issue, consult the New Processes & Technology tabulations initiated by CE in 1951 and published annually in these issues: February 1951, 1952 and 1953; January 1954; Inventory (mid-September) 1954. These surveys, an editorial feature exclusive to CE, have listed a total of over 1,400 new technology advances. Since few details have been published on most of these, for more information we suggest you contact the firm that developed or is using the new technique.

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Sulfur dioxide, liquid.	Smelting.....	International Nickel of Canada	Inco flash smelting process. Finely divided copper concentrates and flux are injected with oxygen into a furnace, producing matte, slag and a gas containing 75% SO_2. Eliminates fuel usually required for smelting. The gas is scrubbed, treated in a Cottrell and compressed to liquefy SO_2.	Developed by International Nickel, Canadian Industries Ltd., and Canadian Liquid Air, Ltd.
Sulfur mining water disposal	Wooden reactor....	Texas Gulf Sulphur Co.... Spindletop Dome, Tex.	Sulfide-containing waters first passed through gas separator, then treated in redwood tanks with H_2SO_3 for 2 hr. at pH 2.8. Effluent limed to pH 7.2 and flocculated with alum.	Overflow from final settling tanks is free of sulfides, relatively stable, neutral and saline, suitable for discharge to streams.
Sulfuric acid.....	Kachkaroff-Guareschi	..... Middle West U. S.	Reports claim first U. S. installation of this Italian process will be made. A tower type nitration process, it claims a reaction space requirement of only 0.12 cu. ft./lb. sulfur/day.	Makes 60 Bé. and at 99.9% conversion. Offered in U. S. by International Processes, Inc.
Sulfuric acid.....	Recovery from sludge	L. Sonneborn Sons..... Petrolia, Pa.	High recycle ratio of coke carries enough heat to decompose acid sludge in absence of air. Circulating coke is heated in tubular furnace. Process can handle wide range of acid-containing sludges.	In commercial operation. Similar unit being installed by Stauffer at Hammond, Ind.
Sulfuric acid.....	Recovery from sludge	Monsanto Chemical Co... Avon, Calif.	Sludge is mixed with circulating coke, decomposed in mechanically rabbled, hearth-type furnace.	Similar unit at Gulf Oil Corp., Port Arthur, Tex. Monsanto developed process.
Sulfuric acid.....	Tail gas fume scrubbing	Olin Mathieson Chemical Corp. Pasadena, Tex.	Modification of Consolidated Mining & Smelting Co.'s SO_2 absorption process uses a two-pass scrubber for gases containing as much as 0.9% SO_2 from acid plants. Tail gases contain less than 0.03% SO_2.	Scrubber uses ammonium sulfite-bisulfite reaction, producing ammonium sulfate and free SO_2 (returned to acid plant) in stripper. Olin Mathieson, licensed by Cominco, will design and license U. S. installations.
Titanium tetrachloride	Fluidized bed.....	Du Pont Co..... Edge Moor, Del.	Mixture of titanium ore and coke is chlorinated in fluidized bed at 800–850° C. Process can use titanium slag.	In commercial operation.
Water, purified.....	Metal salts.....	Salem-Brosius.....	New metal-salt water purification method claimed to kill bacteria and eliminate bad odors and tastes.	.....
Water, desalted.....	Compression distillation	U. S. Dept. of Interior....	Dept. of Interior signed $80,000 research contract with Badger Mfg. Co. to develop process for converting salt water to potable water via recompression evaporation. This is part of Federal Saline Water Conversion program.	Announced April 1954.
Water, desalted.....	Desalting by freezing	University of Washington. Seattle, Wash.	As sea water freezes, fresh water precipitates as ice crystals. Brine collects at bottom of vessel and is replaced by water of lesser density. Process gives a potable water and the energy needed for refrigeration is far less than required for distillation.	Experimental work by University of Washington on an ONR contract.
Water, desalted.....	Electro-membrane ion exchange	U. S. Dept. of Interior....	Membrane materials have been developed which will selectively pass cations in the presence of anions or vice versa. Now being tried out in Federal Saline Water Conversion program. Cells composed of both kinds of membranes demineralize water.	High cost now; expected eventually to be one of the more efficient processes for water de-salting. Such membranes have been developed by Ionics, Inc., Cambridge, Mass., and Rohm & Haas Co., Philadelphia.
Water, desalted.....	Plastic solar still...	Bjorksten Research Laboratories Madison, Wis.	A standard still with 10 sq. ft. of surface area will produce 0.4275 gal. of water per 1,000 Btu. day.	Research to continue.
Water, softened.....	Continuous ion exchange	..... Baxter Springs, Kan.	Portion of base-exchange zeolite is continuously withdrawn and regenerated in a separate column. Process operates with zeolite suspended in fluidized condition.	Developed by Dorr-Oliver Inc. for water softening. Baxter Springs pilot plant has 200 gpm. capacity, reduces hardness to 5 ppm. or less.
Zinc oxide.....	Direct oxidation....	Northwest Refining & Chemical Co. Spokane, Wash.	Standard or low-grade zinc sulfide flotation concentrates are dried, screened, flash oxidized at 2,600° F. in special reverberatory furnace without preliminary roasting. Sulfur in ore acts as fuel booster.	Process successful on small scale. Company estimates plant cost at 10% of conventional process. Plant being built.
Zirconium oxides....	Kiln.....	Zirconium Corp. of America Solon, Ohio	New process using rotary kiln at 2,500° F. produces pure and stabilized zirconium oxides in 4 hr. residence time, compared with other processes taking 40 hr. at arc temperatures.	Claim stabilized product is only completely stabilized zirconia on market. Process said to achieve important power savings. $200,000 plant makes 3 tpd.
Zirconium tetrachloride	Direct chlorination.	U. S. Bureau of Mines.... Albany, Ore.	Process uses direct chlorination of purified zirconium oxide rather than older, more wasteful process of chlorinating the carbide.	This process is an intermediate step in making zirconium metal for AEC. Similar process used by Carborundum Metals Co. at Akron, N. Y.

• Metals

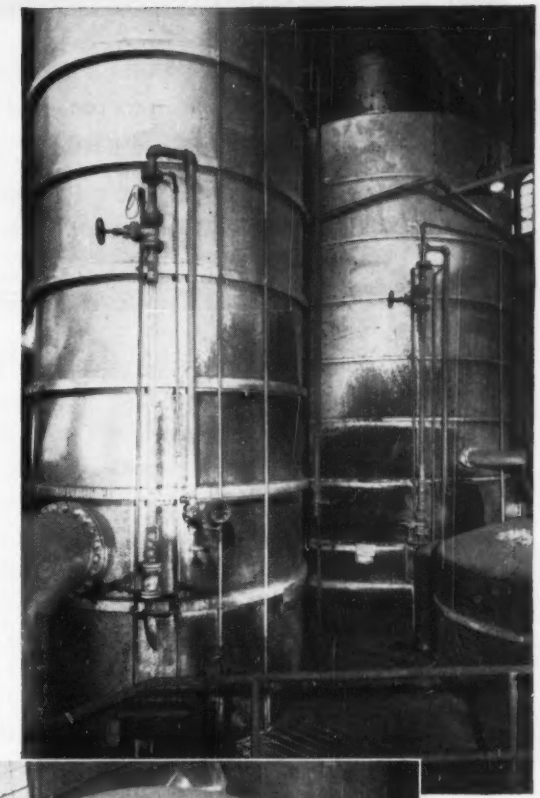
PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Aluminum	Electrolytic	Reynolds Metals Co. Corpus Christi, Tex. and Arkadelphia, Ark.	New reduction cells use Solderberg anodes. Lower half of cell is the cathode and consists of a fabricated box containing 60,000 lb. of carbon lining. Aluminum is held in a 16-in. deep cavity. Anode lowers continuously as it decomposes.	Developed by Reynolds Metals. Each cell consumes 4,000 lb. alumina, 1,000 lb. carbon anode, produces 2,000 lb. aluminum daily. Cell current is probably about 135,000 amp. and power about 7.5 kwh./lb. Al.
Beryllium	Chelation		Sulfated ore is leached with water. A chelating agent plus NaOH converts heavy metals into chelates, aluminum into sodium aluminate and beryllium into sodium beryllate. Heating to 100° C. hydrolizes beryllate to insoluble hydroxide, which is converted to metal.	Developed by Brush Beryllium Corp.
Bismuth	Electrolysis	U. S. Bureau of Mines. Albany, Ore.	Fused $BiCl_3$ is electrolyzed in KCl-LiCl carrier salt, with cathode efficiency nearly 100%. Yield is 88.8% and power is 1.27 kwh./lb. Bi deposited.	Experimental
Chrome plating	Electrolytic	United Chromium, Inc. New York	Plating in ordinary equipment with a special chromic acid bath having automatic regulation of catalyst concentration produces crack-free coatings requiring no nickel or copper undercoat.	Claimed to give easily buffed matte finish directly on steel, with much better than normal corrosion resistance.
Ferrochrome	Simplex	Electro Metallurgical Co. Marietta, Ohio	High-carbon ferrochrome is reduced in carbon content to less than 0.025% by high-vacuum furnacing with silica. Product goes into ELC stainless steels.	Plant in operation. Vacuum is produced by steam-jet system of record size.
Germanium	Zone melting	Bell Telephone Laboratories Murray Hill, N. J.	Process purifies metals such as germanium, organics and inorganics. Since impurities generally are more soluble in liquid, progressive melting of ingot in circular induction heaters sweeps impurities to one end.	Developed by William Pfann of Bell, process now used commercially for near-perfect germanium, can be used for waxes, salt, other metals.
Germanium	Zone refining	General Electric Co. Syracuse, N. Y.	Powdered GeO_2 is reduced by hydrogen, converted into metal bars, purified by zone refining.	Product used to make transistors. Same technique being applied also to silicon.
Hafnium	Kroll	U. S. Bureau of Mines. Albany, Ore.	Hafnium metal of 98+% purity is made by magnesium reduction of the tetrachloride.	Several hundred lb. have been made.
Iron ore	Recovery from nickel	International Nickel Co. of Canada, Ltd. Copper Cliff, Ont.	New process developed by Inco will give higher grade ore than any now turned out in quantity in North America.	New $16,000,000 plant will have 1 million tons/yr. capacity.
Magnesium	Sludge recovery	Dow Chemical Co. Freeport, Tex.	Magnesium trapped in sludge from magnesium plant is separated by crushing, ball-milling, screening. Metal goes back to the main plant for remelting and casting.	Developed by Dow, the recovery plant is in operation. Capacity is 2,500,000 lb./yr. recovered metal.
Magnesium sheet	Continuous casting.	Dow Chemical Co. Madison, Ill.	Process features continuous, direct-chill casting of rolling and extrusion stock. Molten magnesium is pumped by centrifugal pump into top of vertical copper tube. Cooling water plays over tube, and solid column of magnesium moves out the bottom. Billets are then rolled.	First installation for mass production of magnesium plate, sheet and extrusions is in operation.
Magnetic iron ore	Fluidized bed	Jones & Laughlin Steel Co. Michigan	Non-magnetic low-grade ore is reduced in fluid-bed reactor to magnetite, which can then be beneficiated to 63% Fe by magnetic separation.	In pilot-plant operation.
Manganese	From low-grade concentrates		Concentrate is reacted with SO_2 to get $MnSO_4$, which is evaporated, crystallized and sintered to MnO_2. Reaction takes place at 600 psi. in presence of oxygen.	Developed by Chemical Construction Corp.
Manganese	Smelting		Process recovers manganese from steel plant slag. Basic open hearth slag is smelted to produce a low-manganese alloy. Selective oxidizing in a Bessemer produces a cinder having 50 to 60% manganese. Final smelting forms 80% ferro-manganese.	400-ton demonstration plant is in operation at Pittston, Pa. Developed by P. H. Royster of Mangaslag.
Molybdenum	Calcium reduction	U. S. Bureau of Mines. Albany, Ore.	Calcium metal (vacuum sublimed) is added to a stainless steel bomb together with MoO_3 and iodine (1 lb. each MoO_3 and calcium plus 50 grams iodine). Bomb is fired electrically in a remote location. Average recovery of molybdenum is about 97%, 20–25 lb./batch.	Developed by U. S. Bureau of Mines, Albany, Ore.

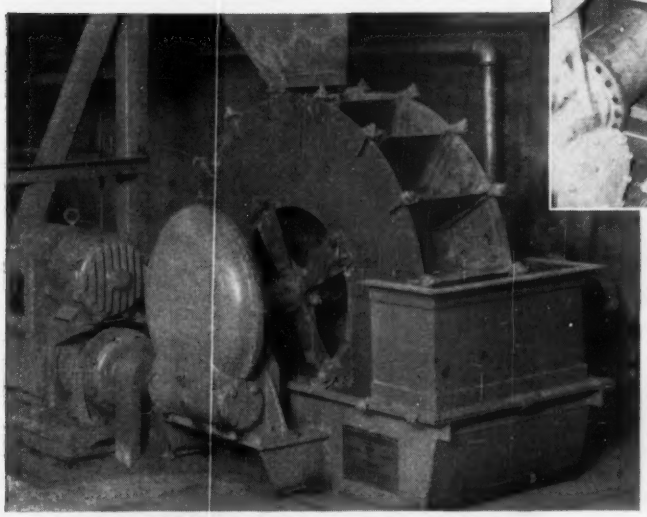
A TRIO FOR PROCESSING PROBLEMS

CONKEY CRYSTALLIZERS, EVAPORATORS AND FILTERS

This is the *trio* that will remedy your crystallizing, evaporating or filtering problems. All three are built to the rugged Conkey design, fabricated in Chicago Bridge & Iron Company's four strategically located shops.

If your plant has a filtering, evaporating or crystallizing problem, write our nearest office. A Conkey engineer will be happy to assist with information, estimates or quotations.





Top: Conkey all nickel construction Triple Effect Evaporator producing 50 per cent caustic liquor.

Above: Conkey Triple Effect Vacuum Crystallizer producing ammonium sulphate.

Left: Conkey Rotary Hopper Dewaterer in service dewatering abrasive grains.

CHICAGO BRIDGE & IRON COMPANY

Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY and GREENVILLE, PA.

CONKEY EQUIPMENT

Atlanta • Birmingham • Boston • Chicago • Cleveland • Detroit • Houston
Los Angeles • New York • Philadelphia • Pittsburgh • Salt Lake City
San Francisco • Seattle • Tulsa

METALS, continued

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Molybdenum.....	Electrolytic.....	.....	A high purity molybdenum is made from a solution of potassium hexachloromolybdate in a molten mixture of alkali halides. Pure molybdenum is deposited on a cathode at a temperature of 900° C. and current densities of 3–100 amp./sq. dm.	Developed by National Bureau of Standards for Army Ordnance.
Nickel.....	Ammonia leaching..	Sherritt Gordon mines Ltd. Fort Saskatchewan, Alta.	Ore is leached with ammonia, metal is precipitated by reduction with hydrogen.	$24-million plant in operation. Process developed jointly with Chemico. Similar operations by Howe Sound, Garfield, Utah (cobalt), and Whitaker Metals Corp., Kansas City, Mo. (copper).
Nickel plating.....	Sulfamate.....	.....	Bath is composed of nickel sulfamate, nickel chloride, boric acid and addition agent. Plating is faster, easier to control, produces harder deposits with less brittleness.	Tested commercially. Developed by Hanson-Van Winkle-Munning Co.
Nickel plating.....	Electrolytic.....	.....	Nickel plating process operates at low temperature. Bath contains nickel sulfate, nickel chloride, boric acid and brightener additives.	Developed by Hanson-Van Winkle-Munning Co. Pilot plant operating.
Titanium plating....	Electrolytic.....	.....	Process for electroplating titanium on steel. Titanium anodes in a fused-salt electrolyte are used at elevated temperatures. Thicknesses up to 2 mils have been achieved.	Developed by Chemical Associates, Washington, D. C.
Sodium metal.....	Molten-lead electrolysis	.....	New cell uses molten lead cathode, based on old German idea. This idea, adapted to modern mercury cell construction, is claimed to produce sodium, lead-sodium alloy or rayon-grade caustic at costs well below those of conventional equipment.	Process developed by Joshua Szechtman. Will be licensed through W. H. Friend, of Amroc Inc. New York. Expect to build pilot plant soon.
Sodium-potassium alloy	Distillation.....	Callery Chemical Co..... Callery, Pa.	Molten potassium chloride at 1,550° F. feeds at the mid-point of a distillation column packed with stainless steel rings. Sodium vaporizing in reboiler rises countercurrent to potassium chloride. Overhead product is a mixture of sodium and potassium vapors which condense as NaK.	In commercial operation.
Taconite agglomerate	Furnace.....	.....	Process involves bentonite addition and heat hardening at 2,400° F. in traveling-grate furnace.	Process developed jointly by Arthur G. McKee Co. and Allis-Chalmers. First plant 1,000 tpd. is operating. Second plant to be 12,000 tpd.
Tantalum and niobium	Liquid liquid extraction	U. S. Bureau of Mines.... Albany, Ore.	Separation of tantalum and niobium from tin slags by preferential extraction with mixed aliphatic ketones, containing anhydrous pentachlorides and HCl.	Experimental.
Ductile tantalum.	Kroll.....	U. S. Bureau of Mines.... Albany, Ore.	Tantalum pentachloride is produced by direct chlorination of tantalum scrap. Excess magnesium is added and reduction carried out in a flowing helium stream. Then vacuum distillation gives pure ductile tantalum.	Laboratory production.
Thorium.....	Alkaline leaching...	.....	New process improves processing of monazite sand (mixed thorium and rare earth metal phosphates) by treating with NaOH, followed by dissolution of hydrous oxides in HCl. Partial neutralization throws down thorium, completion precipitates rare earth metal hydroxides.	Developed by Battelle Memorial Institute; in pilot plant stage. Separation of thorium from rare earth metals is easier than by conventional process.
Titanium.....	Electrolytic.....	Horizons, Inc..... Stamford, Conn.	Will use potassium titanium fluoride and salt as fused electrolyte, graphite and iron electrodes, argon gas blanket in cell.	Government is financing a $564,000 pilot plant to be designed and built by Singmaster & Breyer, N. Y.
Titanium.....	Electrolytic.....	Horizons, Inc..... Cleveland, O.	Titanium metal is made by electrolyzing titanium monoxide in molten anhydrous calcium chloride at 850–900° C.	Work in laboratory stage. Product not of acceptable purity as yet.
Titanium..... ...	Electrolytic.....	Shawinigan Water & Power Co. Montreal, Que.	Process electrolyzes TiL_4 in fused salt electrolyte made up typically of NaCl and KCl at temperature of 1,250° F.	In pilot-plant stage.
Titanium..... ...	Electrolytic.....	United International Research, Inc. Long Island City, N. Y.	Company is developing two electrolytic processes using titanium dioxide dissolved in molten electrolytes. Can produce titanium sponge under vacuum, or powder by continuous leaching.	Claim complete stability of powder which can be formed by powder metallurgy at big saving in metal needed. Pilot plant operation of one process in fall 1954, bench scale on second process.

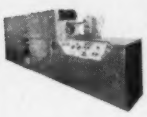
one source

for all your process control and research instruments

From simple polarimeters to major spectrographic equipment, JAco manufactures or distributes a complete line of analytical instrumentation and accessory equipment for your research laboratory or production control procedures. In addition to the many instruments of its own manufacture, JAco also is exclusive U.S. distributor for such well-known lines as Hilger and Watts Ltd., Unicam Instruments, Ltd., (crystallograph apparatus), Nonius and Enraf.

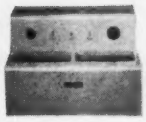
For more complete information on the instruments described briefly here — or any of the other precision instruments made or distributed by JAco, write for free catalogs.

JAco Atomcounter Direct Reading Spectrometer — Compact, self-contained instrument that performs complete analyses in under one minute with standard deviations of 1-2%. Features revolutionary new JAco-engineered dispersing system. Simple unitized construction.



JAco Ebert 3.4 Meter Plane Grating Spectrograph with Order Sorter — The widely acclaimed Ebert Spectrograph is now available with an Order Sorter that presents several orders simultaneously at high dispersion, each as an individual spectrum. Rotation of grating produces dispersions ranging from 5 A/mm to 0.18 A/mm with resolving power up to 300,000.

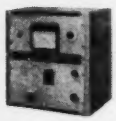
JAco Console Comparator Microphotometer — New desk height console style. Controls on left, to free writing hand. Manual coarse motion control and motor driven fine motion with speed approximately 5 microns per sec. Bright image — may be viewed in normally lighted room. Scanning period and distance controlled by foot switch or push button.



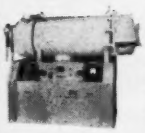
JAco Photoprocessing Unit — Precision photoprocessor for films or plates. Only 28¾" x 17 3/16" x 18⅛". Accurate time and temperature controls assure constant gammas. Processing requires only 3½ min. Eliminates frilling, blisters, and curling.

JAco Monochromator — A low cost, high resolution, electrically driven monochromator for the visible and ultraviolet regions. 0.5 meter focal length. 52 mm x 52 mm grating ruled 1200 lines/mm. F/8.5 effective aperture ratio. Resolution exceeds 0.2 A in first order. Spectral range of 6000 A in first order for a given grating setting — nominally supplied to scan between 2000 A and 8000 A.

Hilger Quartz Prism Direct Reader — An inexpensive instrument giving precision analyses on aluminum, zinc die cast, lead, or other nonferrous alloys, for as many as 10 elements at less than $20,000.



JAco Microspectrophotometer — Fast, sensitive instrument for analysis of solutions in both micro and macro quantities. Single meter indicates ratio of optical density to concentrations — cuts lapsed time per sample to approximately 30 seconds. Approximately 210 to over 600 millimicron range.



Hilger Vacuum Spectrograph — For emission and absorption spectroscopy at wave lengths shorter than the transmission limit of the atmosphere. Features fast high vacuum pumps and reliable vacuum seals. Three models available (both normal incidence and grazing incidence types) covering range from 100 A to 2500 A. 14,400 line/inch gratings on all models.

Hilger Raman Spectrograph — Source features low pressure mercury lamps inside diffuse reflector — four times more efficient than reflecting mirrors. Specimen cells are easy to change. Two high speed cameras (F/1.5 and F/5.7) mounted on pivot for rapid interchangeability. A scanning head, substituted for one camera, with sensitive photomultiplier, amplifier, and strip chart recorder plots Raman spectra directly.

Hilger Refractometers — Three general types available: Abbe type for measurement of refractive index and dispersion in liquids; Chance type for measurement of both solids and liquids to one unit in the fifth decimal place; and two types of Rayleigh interference Refractometers for comparative measurement of liquids or gases to the eighth decimal place.

Hilger Glass Circle Polarimeter — Unusually fast and convenient. Precision of circle is such that a single reading gives accuracy obtained on other instruments by two readings averaged. Glass circle easier to read. Sugar scale is standard.

Hilger Micro-Focus X-ray Unit — Wide application in both diffraction and micro-radiography. Features low exposure time, high resolution, and provision for utilization of special techniques. Especially useful for low scattering angles. Focal spot diameter is of the order of 0.04 mm. Wide range of interchangeable targets.

Hilger Compensated Beam X-ray Diffractometer — For investigation of solid crystals by direct measurement of diffracted intensity. Compensating counter automatically corrects for variations in incident radiation intensity. Glass circle for angle measurement. Fluorescence attachment permits x-ray spectroscopic analysis.

JAco Jarrell-Ash Company

26 FARWELL STREET, NEWTONVILLE, MASS.

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METALS, continued

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Titanium	Sodium reduction	Electro Metallurgical Co. Ashtabula, Ohio	Process involves sodium reduction (rather than magnesium reduction as in Kroll process) of titanium tetrachloride. British ICI has similar process with full scale operation scheduled late 1955.	$31.5 million plant being built at Ashtabula for early 1956 completion will be largest titanium producer in world. Production will be at least 7,500 tons titanium per yr.
Titanium ingots	Double-melting	.....	Double melting process produces titanium alloy ingots weighing up to 100 lb. in an arc furnace with non-consumable electrodes.	Developed by Armour Research Institute. Chicago Ill.
Titanium ingots	Double-melting	Mallory-Sharon Titanium Co. Niles, Ohio	New furnaces are constructed to withstand much higher pressures than commonly encountered. Operation is entirely by remote control.	Titanium ingots are in production at the Mallory plant.
Titanium ingots	Vacuum melting	Titanium Metals Corp. of America Henderson, Nev.	Vacuum melting furnace for titanium ingots to 4,000 lb. size reduces hydrogen in metal to as low as 50 ppm., better than conventional argon or argon-helium flooded furnaces.	Gives better metal properties. Results so good that furnaces for 8,000 lb. ingots being considered
Uranium	Alkaline pressure leaching	.....	Uranium ore, containing pitchblende, is mixed with sodium carbonate solution and autoclaved continuously at 100 psi. in presence of air. Uranium solution then autoclaved with hydrogen and nickel catalyst.	Process developed at Univ. of British Columbia.
Uranium	From phosphate rock	Blockson Chemical Co., Joliet, Ill.; International Minerals & Chemical Corp., Bonnie, Fla.; and Virginia-Carolina Chemical Corp., Nichols, Fla.; others.	Superphosphate is leached, leach solution is solvent-extracted, and uranium salt, containing also rare earths, is precipitated.	Process now operating produces in the range of 60,000 to 160,000 lb. uranium per year at Bonnie plant alone.
Zirconium	Electrolytic	Horizons, Inc. Cleveland, O.	K_2ZrF_6 is electrolyzed in NaCl bath to produce ductile zirconium. Yields and current efficiencies are good enough for commercial operation.	Pilot plant can make 30–40 lb. per run.

• Petroleum & Natural Gas Products

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Acetylene	Partial oxidation	American Cyanamid & Chemical Co. Avondale, La.	Using German-developed BASF process. Oxygen and methane are heated to 600° C., mixed, reacted and quenched in a special burner. Product gas containing 8.5% acetylene is stripped with undisclosed selective solvent.	Avondale plant has 60 tpd. capacity. Process available for license in North America through Chemical Construction Corp.
Acetylene	Solvent concentration	.....	Process concentrates acetylene (in concentrations of 5–15% as made from natural gas or methane) by using dimethyl formamide as a selective solvent. A high purity, 99% acetylene, can be produced.	Developed by researchers at the University of Texas.
Aromatics	Platreating	Roosevelt Oil & Refining Corp. Mt. Pleasant, Mich.	Process uses byproduct hydrogen from a Platforming unit to saturate the olefins in an aromatic distillate, permitting recovery of aromatics in a Udex unit. Uses platinum-base catalyst.	Developed by Universal Oil Products Co. Unit is on stream.
Aromatics	SO_2 extraction	Continental Oil Co. Lake Charles, La.	Uses hydrocarbon wash to extract aromatics from reformer product. Gets good separations, requires only one stage to remove SO_2 from raffinate.	Unit in commercial operation handles 3,570 bbl./day from Platformer.
Carbon black	Furmatic	Lynn Carbon Black Co. San Angelo, Tex.	Uses spherical burner. Yields 40–50% higher than conventional processes, capital and operating costs are low.	Consolidated Carbon Corp. formed to license process and build plants.
Ethylene	Modified Wulff	.....	Gas oil is treated by modified Wulff process. Being considered by Oronite Chemical for a new ethylene plant at Perth Amboy, N. J.	Experimental now. Developed by California Research Corp.
Ethylene and propylene	Pebble-heater cracking	Phillips Petroleum Co. Borger, Tex.	For cracking and high temperature superheating of light hydrocarbons pebble heater unit has now operated for several years at 30,000,000 Btu./hr.	Yield of ethylene from butane is 50% greater than in tube furnaces. Yield of ethylene-acetylene from ethane-rich feed is 25% greater, and at the hitherto unattainable level of 91% conversion of ethane. New development consists of two refractory-lined vessels, heater and reactor, one above the other.

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PETROLEUM & NATURAL GAS, continued

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Ethylene oxide	Catalytic oxidation	Allied Chemical & Dye Corp. Orange, Tex.	High-pressure air is mixed with ethylene and passed over catalyst. Ethylene oxide is hydrated to glycol in scrubbing towers, concentrated by fractionation.	Process developed by Scientific Design Co. Allied's $5-million plant is now in operation. First U. S. application.
Fuel gas	Pressure hydrogasification		Process completely converts liquid hydrocarbons and natural gasoline to fuel gas of 930–1,100 Btu./scf. Higher mole weight feeds give 82% conversion. Use three-section tube furnace for preheat, and thermal cracking.	Developed by Institute of Gas Technology, Chicago. Continuous pilot plant converts 50–80 gph. of hydrocarbons plus 60-100 scf. H_2/gal. to gas.
Fuel gas	Thermal cracking		Cracking of propane, butane and natural gasoline in a 2.5-in. dia. tube furnace at 3 atm. pressure. Reaction times are on the order of 11 sec.	Developed by Institute of Gas Technology, Chicago. Process makes natural gas substitutes and can be used to supplement normal gas supplies during peak demand periods.
Fuel gas	Pyrolytic cracking		Thermofor pyrolytic cracking (TPC) process produces 950–1,050-Btu. fuel gas from reduced crudes or other heavy petroleum fractions. Uses bed of moving solid coke particles as pebble heater to heat charge and retain carbon resulting from cracking.	Process resembles Socony-Vacuum's TCC process. Developed by Surface Combustion Corp. in cooperation with Socony-Vacuum (now Socony Mobil Oil.
Fuel oil, kerosene	Mercaptan removal	Standard Oil Co. (Ind.) Whiting, Ind.	Mercaptans can be removed from sour heavier distillates without serious color formation by treating with a controlled amount of air or oxygen in the presence of aqueous KOH (50–60% wt. concentration) at 80–125° F. in the presence of a particular copper catalyst.	Mercaptans converted to disulfides without forming objectionable color bodies—with phenomenal rates. Described in U. S. Pat. 2,646,389.
Gasoline	Catalytic cracking	Sinclair Refining Co. Houston, Tex.	Cat cracker recovers waste heat from catalyst regenerator gases. It is used for auxiliary steam production.	Designed by Sinclair, cracker is handling 50,000 bpd.
Gasoline	Catalytic cracking	Sun Oil Co. Sarnia, Ont., Canada	Catalytic cracking process can handle heavy, metal-contaminated bottom residues, yields high-octane gasoline and domestic furnace oil. Metals do not affect catalyst.	Available from Houdry Process Corp., called Houdresid process.
Gasoline	Catalytic hydroforming	Standard Oil Co. (Ind.) Whiting, Ind.	First commercial size changes 30,000 bpd. low octane naphtha into high octane hydroreformate for gasoline blending. Reactor and regenerator are in vertical alignment.	Orthoflow catalytic hydroforming process developed by Standard Oil, jointly with M. W. Kellogg Co., available from latter.
Gasoline	Catalytic reforming	Socony Mobil Oil Co. Various	Fixed bed process using platinum catalyst —used on low-sulfur, straight-run naphthas. For these stocks, extensive catalyst regeneration is not needed.	Nine units being built in U. S.
Gasoline	Catalytic reforming	Standard Oil Co. (Ind.) Wood River, Ill., and others	Ultraforming process, developed by Standard Oil (Ind.), is fixed-bed reforming process with platinum-containing catalyst supplied by American Cyanamid Co.	Capacity totalling 40,000 bpd. installed by SOInd, Pan-Am, Pan-Am Southern, and Canadian Petrofina, Ltd.
Gasoline	Continuous contact coking		Continuous process handles much heavier feedstocks than can be processed by conventional delayed coking.	Investment and operating cost both less than for delayed coking unit. Gives lower coke production, higher gas and gasoline yields. Offered by Lummus Co.
Gasoline	Fluid coking	Carter Oil Co. Billings, Mont., and others	Requires no catalyst. Uses circulating stream of finely divided coke to furnish heat for coking reaction. Converts crude oil residuals to lighter oils and coke.	Process requires no periodic shut-downs for coke removal. Developed by Esso Research & Eng. Co. In operation mid-1955.
Gasoline	Fluid hydroforming, Model II		Efficiency of fluid hydroforming increased, investment cost cut 15–20%, processing costs lowered 7–10 c. per bbl. feed by circulating inert "shot" heat carrier with catalyst to recover regeneration heat beyond capacity of catalyst alone.	Developed by Esso Research & Eng. Co. Proved in pilot plant at Baton Rouge. Recovers all regenerator heat with minimum recycle of reactor tail gas. Various companies considering commercial use.
Gasoline	Mercaptan removal	Cities Service Refining Corp. Lake Charles, La.	Replacement of Raschig-ring-packed stripper in Unisol process with bubble-cap tower gives higher extraction efficiency, without fouling of heat exchangers from Raschig ring erosion.	Decreased maintenance is expected. Unit went on stream Oct. 1954.
Gasoline, high-octane	Reforming with non-aromatic recycle		New processes developed by both Universal Oil Products Co., Chicago, and Houdry Process Co., Philadelphia, increase octane of catalytic reformer gasoline by passing stabilized reformer product through extractor, removing and recycling low-octane non-aromatic fractions to reformer. Both processes feature mild conditions.	UOP process is called Rexforming; Houdry process is Iso-Plus. Variation of latter uses thermal reforming of stabilizer reformer gasoline.

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Gasoline, low-sulfur..	Hydrodesulfurization	.....	Vanadium oxide has been found to be a suitable catalyst for reducing sulfur content of gasolines by hydrogenation.	Experimental development of Illinois Institute of Technology, Chicago.
Gasoline treating....	Extraction.....	Magnolia Petroleum Co... Beaumont, Tex.	Mercaptan separation from gasoline improved by using three-component solvent of composition giving two phases where mercaptan equilibrium is more favorable. Uses mixer-settler.	Called Dualayer process. Gives better mercaptan removal than other methods. Unit under construction at Beaumont.
Gilsonite coke.....	Delayed coking....	American Gilsonite Co.... Bonanza, Utah	Gilsonite will be hydraulically mined, transported in water suspension, dried, melted and coked in a delayed coker. Coker overhead will go to a catalytic reformer.	Coking plant in Colorado, 80 miles from mine, will produce 40% high-grade coke, 43% 93 octane gasoline, 15% fuel gas. To cost $10 million, handle 600–700 tpd. of gilsonite.
Hydrocarbon synthesis	Direct CO conversion	Rheinpreussen A. G..... Homberg, Germany	Reaction, not fully understood, uses iron catalyst for liquid-phase combination of CO and water vapor in a single pass. With water-CO ratios of 1.5 to 3, 93% yield of CO, as mainly olefins, C_3 and heavier, was achieved. Claimed to improve on dry Fischer-Tropsch type synthesis.	Process was announced June 1955 at 4th World Petroleum Congress in Rome. Koppers Co. has licensing rights for Western Hemisphere and other areas.
Lubricating oil.....	Hydrofinishing.....	Imperia Oil Co..... Edmonton, Alta., Canada	New Hydrofinishing process for finishing lube oils involves passing hydrogen through the lubricant to remove impurities. It replaces clay filtration. Hydrogen comes from catalytic reformer.	First unit being built.
Lubricating oil.....	Treating.....	Sun Oil Co..... Marcus Hook, Pa.	New process uses hydrogen and a catalyst; low pressure, one reactor.	Commercial unit nearing completion.
Natural gas.....	Water washing.....	Shell Oil Co..... Calgary, Alta. Canada	Water washing of natural gas containing 32–35% H_2S and 12% CO_2, at 500 psi., removes 80–90% of H_2S and 60% of CO_2 at low cost. Simple flashing releases H_2S from water.	300,000 cfd. pilot plant indicates 25% cost saving compared with ethanolamine absorption.
Oil.....	From tar sands.....	W. M. Barnes Co..... Los Angeles, Calif.	Utah tar sands are extracted to yield a product similar to virgin gas oil, low in sulfur and nitrogen and susceptible to conventional cracking techniques.	Pilot plant results are said to show process ready for commercial operation.
Olefins.....	Moving-bed coking.	Farbwerke Hoechst A. G. Frankfurt, Germany	Coke pebbles indirectly heated in tubes are mixed with preheated crude or residual oil feed. Coke made forms in pebbles at 1,300° F. Gaseous reaction products are quenched, then fractionated.	Process produces 55% gaseous hydrocarbons, C_4 or lighter (58.8% olefinic) plus 38.2% liquid and 6.5% of coke, operating on crude oil. With residual oil feed, coke is higher, gaseous products less.
Petroleum.....	From oil sands.....	Can-Amera Oil Sands Development, Ltd. Calgary, Alta., Canada..	Details not released. Experimental portable extraction unit is said to have produced satisfactory results. Process depends on centrifugation of oil sand suspension in a light oil.	.....
Petroleum distillates.	Desulfurization.....	Union Oil Co..... Los Angeles, Calif.	Catalytic refining process (Unifining) upgrades low quality petroleum fractions by removing sulfur and nitrogen. This is done by mixing feed stock with recycle hydrogen, vaporizing, and passing the mixture through a bed of cobalt-molybdate catalyst.	First unit at Union's Oleum refinery, designed for 15,750 bpd.
Petroleum waste disposal	Bacterial oxidation.	Sun Oil Co. Ltd..... Sarnia, Ont., Canada...	Refinery waste water containing phenol or other dissolved organics is oxidized by bacteria in presence of air in 90 x 70 x 12 ft. oxidation pit.	Sun has disclosed all technical information to International Joint Commission on Water Pollution. Other oil companies are experimenting.
Refinery waste disposal	Microbiological cultures	McMurrey Refining Co... Tyler, Tex.	Specially bred cultures of bacteria and fungi (supplied by Reliance Chemicals Corp., Salem, Ill.) produce enzymes that attack specific chemicals. Break down phenols, aldehydes, and cyclic compounds. Good for textile mill and paper wastes, etc. Fewer byproducts and less sludge.	Pilot-plant and semi-works operating.
Residium upgrading..	Decarbonizing.....	McMurrey Refining Co... Tyler Tex.	Decarbonizing process upgrades residues of oil refining that are fluid enough to be pumped.	Process available from Blaw-Knox Co.
Residium upgrading..	Hydrodesulfurization	Gulf Oil Corp.....	New catalyst said to have much improved hydrocracking activity compared with nickel oxide, makes possible desulfurization with H_2 of crude oil or heaviest oil fractions. Pressure less than 1,000 psig. Hydrogen-to-carbon ratio increased by (1) adding hydrogen and (2) decreasing carbon content.	Basic pilot plant work complete.
Shale Oil.....	Fluidized retorting..	.....	Finely ground oil shale can be completely retorted in fluidized bed with both raw and retorted shale remaining free-flowing.	Experimenta work at University of Colorado, Boulder, Colo.

PETROLEUM & NATURAL GAS, continued

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Shale oil	Retorting	Linden & Co. Beverly Hills, Calif.	Shale is retorted in special rotary kiln with counterflow of heat-carrier balls made of spent shale.	Process developed by Aspegrent & Co., of Sweden. Linden has exclusive U. S. rights. Building pilot plant at Grand Junction, Colo., to be operated under contract by Denver Research Institute.
Shale oil	Retorting	Union Oil Co. Parachute Creek, Colo.	Union Oil going ahead with 1,000 tpd. of shale plant. Shale will be retorted near mine and crude oil coked. Coke distillate will be hydrogenated to remove sulfur and nitrogen, sent to Coast for normal refining.	Union figures that a full-scale plant, say 40,000 bpd., would cost $75 million for plant, $56 million for pipeline to Coast, could deliver oil in Los Angeles at prices matching crude oil.
Shale oil	Underground combustion	Sinclair Research Laboratories, Rifle, Colo.	Retorts shale *in situ*, then pumps oil to surface.	Development work to continue.

• Plastics, Resins and Rubber

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Cold rubber		U. S. Rubber Co. Naugatuck, Conn.	Company reports successful experimental production of synthetic latex by new process which makes cold rubber in shorter time and at lower costs than in Government plants.	
Fluorothene resins	Continuous	Carbide & Carbon Chemicals Corp. South Charleston, W. Va.		Commercial production begun in early 1954.
Furfuryl alcohol resin	Polymerization	T. F. Washburn Co. Chicago, Ill.	Furfuryl alcohol is heated with activated alumina. Resulting liquid is blended, cured to final resin. Avoids use of strong acid catalyst, water solvent, neutralization, washing and drying, as with earlier processes.	Process developed by Armour Research Foundation, Chicago, offers wide range of products, from semi-solids to grindable solids. Being evaluated for plastic pipe.
Glass-bonded resins	Chemical bonding	Naval Ordnance Laboratory White Oak, Md.	Properly substituted chlorosilanes are thought capable of bonding chemically, not only to glass, but to reactive groups in all three commonly used resin types: phenolics, epoxies and polyesters.	Pilot plant production is scheduled.
Polyesters, chlorinated	From pentane and maleic anhydride	Hooker Electrochemical Co. Niagara Falls, N. Y.	Pentane is chlorinated and cyclized, reacted with maleic anhydride, esterified with glycols.	In production. Resin is fire resistant, stable to heat.
Polyethylene	Low pressure synthesis	Max Planck Institute for Coal Research Mulheim/Ruhr, Germany	Ethylene polymerizes at atmospheric pressure and only slightly elevated temperature (60–70°C.). Catalyst is metal alkyl in hydrocarbon solution.	This process has been licensed to several U. S. companies. Developed by Karl Ziegler.
Polyethylene	Low-pressure synthesis	Bakelite Co., South Charleston, W. Va., and others	At least nine U. S. firms testing process of Karl Ziegler, Max Planck Institute, Berlin. Process uses a metal organic complex catalyst and operates at temperatures and pressures close to 1 atm.	New product, still being developed, expected to be more rigid, have higher softening point, that polyethylene made by conventional high-pressure process.
Polyethylene	Low-pressure synthesis	Phillips Chemical Co. Pasadena, Tex.	Ethylene is polymerized at about 310°F. and about 500 psi. in a diluent such as a C_5–C_{12} paraffin. Catalyst is chrome oxide on a silica-alumina support. Claim production of denser, harder, higher-melting polyethylene.	Phillips will build a 110 million lb./yr. commercial plant at Pasadena, plus 145 million lb./yr. ethylene plant at Sweeney, Texas. Will license process to others.
Polyethylene	Moderate pressure synthesis	Standard Oil Co. (Ind.)	Working on process believed to operate at about 1,000 psi. and 450–500°F. Catalyst may be subhexavalent molybdenum oxide.	
Polyethylene, pelletized		Koppers Co. Port Arthur, Tex.		Production scheduled October 1955.
Polyethylene, irradiated	Irradiation	American Agile Corp. Cleveland, Ohio	Company is now fabricating process equipment, e.g. evaporators, from irradiated polyethylene which will withstand 350°F.	
Polyethylene waxes	Synthetic	Allied Chemical & Dye Corp. Tonawanda, N. Y.	Ethylene is derived from gas produced from fuel oil. Plant produces low molecular weight polyethylene waxes.	Ethylene plant designed by Lummus, polyethylene plant by Semet-Solvay engineers.
Polymers, irradiated	High-energy irradiation	General Electric Co. Pittsfield, Mass.	Few seconds exposure to particle bombardment produces cross-linking of long-chain polymers such as polyethylene, nylon, polystyrene, polyvinyl chloride, polyvinyl alcohol and carbowax.	Tests conducted in atomic pile in England and with a million-volt X-ray machine at G. E. in the U. S. Polyethylene is converted to insoluble, infusible plastic.
Polysulfone resin	Emulsion polymerization	Phillips Chemical Co. Houston Tex.	Olefine and SO_2 mixed with water, emulsifier and catalyst, stirred 4–6 hr. at 100°F. and 75 psig. Product is white thermo-plastic resin.	Phillips expects to build but this is a long-range project.

Tall Towers at Eagle Point

The three fractionating towers in the foreground are important components of the new alkylation unit at The Texas Company's Eagle Point Refinery at Westville, New Jersey. Their job is to help in the precise selection of light hydrocarbons used in producing aviation gasoline.

Tallest of the trio is the 152-ft deisobutanizer in the center, also shown below during shipment from our Weldment Shop in Bethlehem, Pa. Flanking it at the refinery are a 104-ft depropanizer and 100-ft debutanizer. All were built by Bethlehem, to the API-ASME Code.

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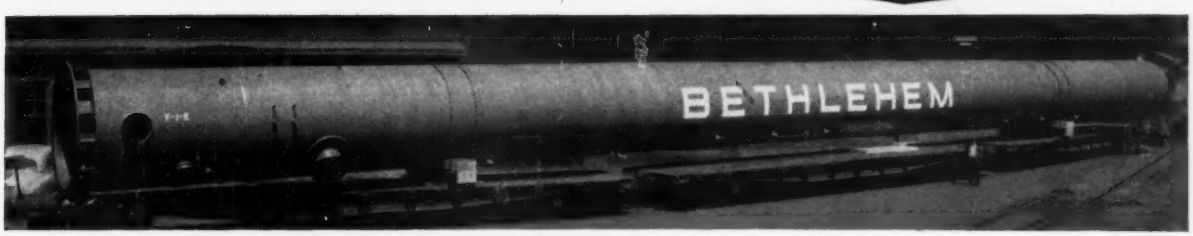


PLASTICS, RESINS & RUBBER, continued

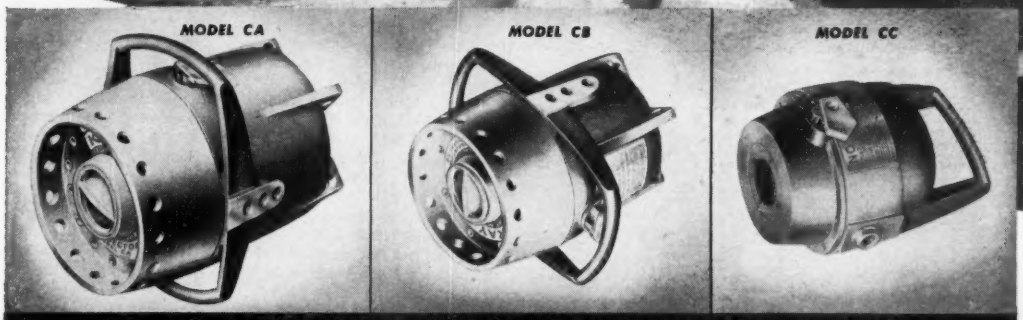
PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Polyvinyl chloride...	Internal plasticizing	.....	Vinyl stearate is copolymerized with vinyl chloride; stearate can't migrate or evaporate. Stearate content can be adjusted so as to give either rigid or flexible plastic.	Developed by U. S. Dept. of Agriculture National Starch and Dewey & Almy also working on internal plasticising.
Polyvinyl chloride...	Suspension polymerization	General Tire & Rubber Co. Ashtabula, Ohio	Process uses less than 1% PVA as suspending agent, plus benzoyl, acetyl and lauryl peroxides as catalysts. These, mixed with vinyl chloride monomer and water, are polymerized batchwise in a jacketed reactor.	Process offered by Scientific Design Co., New York, has already been installed in a European plant. Claimed to be an improvement over an earlier European process, giving more versatile product than conventional emulsion process.
Protein plastics.....	From fish.....	Wm. A. Mohn & Son A. S. Bergen, Norway	Skins and fresh fish waste are raw material. 5 tons of waste will make a ton of molding powder. Partial and controlled hydrolytic decomposition of the fish protein gives a satisfactory flow characteristic for a molding powder. Adding formaldehyde then produces a thermosetting material.	Economically feasible in Norway.
Resins.....	Continuous.....	.....	Pipeline reactor is used for thermally sensitive resins. This is followed by a continuous vacuum dehydrator and a continuously moving metal plate on which the resin is poured. Finished resin is chipped continuously from the plate.	Developed by General Electric Co.
Resin, water-dispersed	.....	Reichhold Chemicals, Inc.. Detroit, Mich.	New resin contains three components, a phenol-formaldehyde resin, an alkyd resin, and ammonia to make mixture water-soluble. Finishes must be baked after application.	Expect new resin to be useful in metal finishes, saving users 10–25% compared with present coating costs Called Hydrophen.
Rubber.....	Synthesis.....	Goodrich-Gulf Chemicals, Inc.	Company claims to have synthesized true molecule of crude natural rubber. Can't be produced in present synthetic rubber plants.	Patents pending.
Rubber, vulcanized..	Gamma radiation...	Air Research & Development Command Baltimore, Md.	Claimed to replace heat vulcanization, giving superior products for specialized rubber uses.	Believed still in laboratory stage.
Styrene monomer....	Alkylation-dehydrogenation	Foster Grant Co..... Baton Rouge, La.	Benzene and ethylene are alkylated with alumina catalyst, products separated to make pure ethyl benzene. Steam is added and product dehydrogenated over iron oxide catalyst. Styrene monomer is purified by scrubbing, refrigeration, decantation and vacuum distillation, using hydroquinone as a polymerization inhibitor.	Company's own process—not licensed from Dow—is in operation in $4-million plant, making monomer which is shipped to Leominster, Mass., to make polystyrene molded goods at parent plant. Yield said to be high, similar to Dow's.
Urea-formaldehyde resins	Polymerization.....	.....	Sugar and urea react to form a preliminary product which is reacted with aqueous formaldehyde to form sugar carbamate resin. Air drying converts resin to hard, water-resistant, transparent film.	Developed by Sharples Chemicals. Laboratory-scale experiments so far.
Vinyl chloride.....	From natural gas...	.....	New laboratory development of University of Texas adds chlorine to low-acetylene gases produced by arc and thermal processes, forms HCl in place and reacts to form vinyl chloride.	Process uses $HgCl_2$–$BaCl_2$ catalyst, with initiation by glowing wire. To be offered by Fluor Corp. when ready for commercial use.

• Pulp & Paper

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Hardwood pulp.....	Chemigroundwood..	Great Northern Paper Co. East Millinocket, Me.	Process developed by N. Y. State College of Forestry cooks 4-ft. hardwood logs in neutral sulfite liquor in 62 x 10½ ft. digester, after initial evacuation. Logs are then reduced to fiber by grinding on special dull stones. 85–90% yield with big saving in cooking time, power for grinding.	350 tpd. chemigroundwood capacity enabled company to use up to 30% hardwood pulp in newsprint, tripling newsprint capacity in $45 million expansion.
Kraft mill odor..... elimination	Trapping and chlorination	Weyerhaeuser Timber Co. Everett, Wash.	Vaporsphere system consists of a 25-ft. dia. steel sphere covering a leak-proof plastic diaphragm. Sulfur gases released from digester are trapped here, then drawn off slowly and mixed with chlorine.	New installation has cut by 90% objectionable odors remaining after off-gases are condensed.

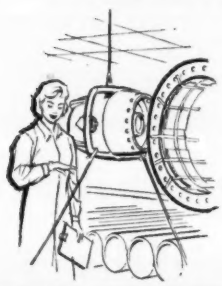
presents the KEL-RAY® Projector

A safe versatile tool for Radiography with gamma rays . . .



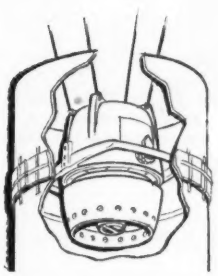
Depending on the projector model and service requirements either encapsulated Cobalt 60, Cesium 137 or Iridium 192 is used as the gamma ray source.

NON-DESTRUCTIVE INSPECTION and TESTING



SAFE

KEL-RAY projectors have extremely low radiation leakage. . . so low they can be shipped and stored without additional shielding. They are tamper, fire, and shock proof. Operated under prescribed procedures, leakage is below the AEC limit.



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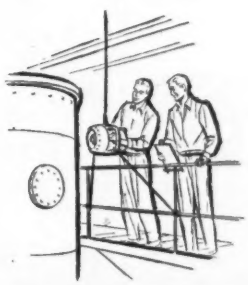

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PULP & PAPER, continued

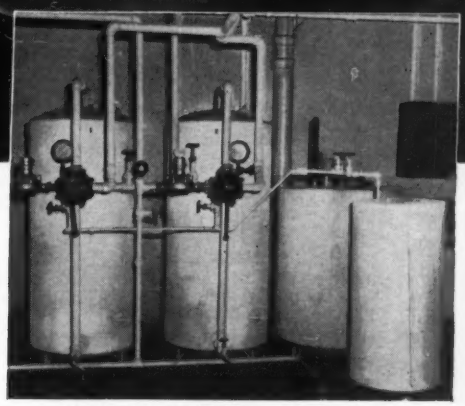
PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Kraft mill waste disposal	Bio-oxidation	West Virginia Pulp & Paper Co. Covington, Va.	First activated sludge plant to treat pulp mill wastes reduces BOD of 16–24 million gal./day from 140 ppm. to 15 ppm. Only nutrients needed for activated sludge organisms are 2 ppm. phosphorus as H_3PO_4 and 4 ppm. nitrogen as NH_3.	Process involves primary settling, addition of nutrients, aeration of waste and activated sludge, sedimentation, clear overflow, recycle of settled sludge organisms.
Kraft pulp	Continuous cooking		Kamyr continuous cooking process is claimed capable of producing a pulp equal to that made by batch systems.	Developed by A. H. Lundberg, Inc. A 30–60 tpd. unit is in operation.
Newsprint	Semichemical pulping		Allows use of 40% poplar wood in newsprint compared to 20% previously used successfully.	Process developed by Kinsey Chemical Co.
Nitrate pulp	Nitric acid digestion		New French Delbay process claimed to pulp any kind of cellulose in 3–4 hr. with 30 Bé. HNO_3 at room temperature and pressure. Neutralization and bleaching follow digestion. Claim 50% pulp yield for most raw materials. HNO_3 selectively attacks lignin with little effect on cellulose.	20-ton demonstration plant being built in France. Expect investment to be $35,000 per daily ton. Process offered in U. S. by Council on Public Relations, New York.
Paper, coated	Electrostatic	Bergstrom Paper Co. Neenah, Wis.	Coating material is charged electrically and deposited on paper web with strong electrostatic fields.	Developed by Battelle Memorial Institute, Columbus, Ohio.
Paper stock, cleaned	Vacuum-deaerator cleaning	Numerous	In Deculator-Cleaner process, dilute paper stock is sprayed into vacuum receiver, then goes into centrifugal separator. Process removes both air and dirt from stock.	Developed by Rotareased Corp., in cooperation with Bauer Bros. Co., Springfield, Ohio.
Pulpwood	Chemical debarking	Various	Live trees are debarked by use of sodium arsenite.	17 firms have purchased process for public use.
Sulfite pulp	Continuous	American Box Board Co. Filer City, Mich.	Completely continuous process makes pulp from hardwoods. Includes new continuous digester, refining and screw press washing.	Designed by American Box Board and Sumner S. Sollitt Co. A 13 tph. plant is in operation.
Sulfite pulp	Quick cook	United Paper Mills Ltd. Valkeakoski, Finland	Cooking time is cut 30% without loss in quality.	Commercially proved. Conversion of several other mills underway.
Sulfite pulp	Soda-base digestion	Nekoosa-Edwards Paper Co. Port Edwards, Wis.	Process substitutes caustic soda for limestone in making sulfite cooking liquor. This is expected to make cooking liquor recoverable and so cure pollution problem.	Developed by Western Precipitation Co

• Textile Fibers

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Acrylic fiber	Polymerization and spinning	Chemstrand Corp. Decatur Ala.	Process improvements have eliminated fibrillation, reduced brittleness of Acrilan acrylic fiber.	In production.
Cotton	Cyanoethylation		Treatment of cotton with aqueous NaOH, then with acrylonitrile, produces fiber which is stronger.	Original development at Institute of Textile Technology, Charlottesville, Va. American Cyanamid and Monsanto are investigating in pilot plants.
Dynel	Dope dyeing	Carbide & Carbon Chemicals Corp.	Fiber has color in it as spun. Acetate, Viscose and Saran have also been dyed this way.	In operation.
Nylon cord	Hot stretching	General Tire & Rubber Co.	Nylon tire cord is stretched nearly to the breaking point under heat, then dipped in crude rubber. Tires with these cords stretch less in use.	Product called Nygen. In commercial production.
Nylon-6	Via caprolactum	Allied Chemical & Dye Corp., National Aniline Div. Chesterfield, Va.	Process route is benzene, phenol, cyclohexanone, (plus hydroxylamine) cyclohexanone oxime, to caprolactam. Monomer is polymerized to nylon-6.	Product, now made as molding powder, will also be supplied as textile fiber competitive with conventional nylon.
Polyvinyl alcohol fiber	From vinyl acetate.	Kurashiki Rayon Co. Toyama and Okayama, Japan	Vinyl acetate, from acetylene and acetic acid with zinc acetate catalyst, is polymerized in methanol with peroxide catalyst, then hydrolyzed to PVA with NaOH. Water solution of PVA is spun into glauber salt solution, filaments insolublized with formaldehyde.	Old polyvinyl alcohol process, previously unsuccessful in Germany, now working successfully in 20 tpd. Japanese plant. Fiber is low in cost, has interesting textile properties, called Vinylon.
Synthetic fibers	Polymerization		Polyaminotriazole (PAT) filaments are made by reacting sebacic acid, 60% hydrazine and acetamide in an autoclave at 210° C. for 15 hr. Product, when formed into filaments, has high strength and good dyeability.	Process, developed by British Celanese, reported in laboratory stage.

problems in water conditioning...

RETURN LINE CORROSION



COCHRANE DEALKALIZER SAVES UP TO $2,000. PER YEAR AT READING HOSPITAL
Return line corrosion due to alkalinity in boiler make up became a costly problem at Reading Hospital, Reading, Pa. Although alkalinity was relatively low, the need for dealkalizing became obvious as pipe replacement costs reached $2,000.00 in one year. The Cochrane Dealkalizing equipment shown above effectively reduced CO_2 more than 90%—to less than 2 ppm.

Cochrane

Salt-splitting Dealkalizer *effectively* reduces alkalinity

Corrosive attack due to the presence of carbonic acid in condensate can be especially harmful in condensate return lines. This carbonic acid forms in the boiler steam, due to high alkalinity in the feed water. The COCHRANE Salt-splitting Dealkalizer offers a simple, effective, and economical means of reducing alkalinity, thereby solving this problem.

The system is composed of a Cochrane Sodium Zeolite Softener and a Dealkalizer. After passing through the Sodium Zeolite Softener, the effluent is fed directly to the Dealkalizer. Here strongly basic anion resins exchange their chloride ions for alkalinity. Regeneration is accomplished quickly, easily, and at low cost by means of sodium chloride brine.

Direct-acting SOLO valve for small units, or pilot operated HYDROMATIC valve for larger units provides simple, fool-proof control of the regeneration. Automatic control can be provided where required.

Cochrane Corporation designs and manufactures complete lines of deaeration, ion exchange, precipitation and other water conditioning equipment. . . . Consult Cochrane First! Write for Publication 4567.

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Inquiry Code Number for this advertisement-65

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Synthetic fibers	Yarn mixing		New yarn mixing process said to help solve problems of dyeing and static electricity in synthetic fiber constructions.	Development of Textile Research Institute.
Viscose rayon staple	Spin-dyeing	Courtaulds, Inc.	First U. S. producer to spin-dye viscose staple; product is made in 10 colors, by incorporating dye in viscose.	Developed by Courtaulds Ltd., in England.

• Miscellaneous Technology

OPERATION	EQUIPMENT	USER & LOCATION	FEATURES	STATUS & REMARKS
Adsorption	Fluidized adsorbent.		Contactor similar to bubble cap column gives stagewise contact between fluidized adsorbent char and gas mixture to be separated. Claimed to give extremely good separation of light from heavy hydrocarbon vapors.	Developed by Esso Research & Eng. Co., New York. Offered for license by Stone & Webster Eng. Co. Claimed suitable also for solvent recovery, hydrogen purification. Called Fluid Char Adsorption.
Adsorption	Synthetic zeolite		New line of adsorbents with controllable fine pore sizes can be used for separations in the range of 4 or 5 Angstroms molecule size. Can be used, for example, to separate CO_2 or acetylene from propane or higher *n* paraffins, or polar from non-polar compounds.	Developed by Linde Air Products Co. Called "Molecular Sieves." Not harmed by high temperatures and so are easily reactivated.
Air pollution abatement	Smokeless flare	Esso Standard Oil Co. Linden, N. J.	Smoke eliminated by injecting water into combustion zone; water pressure raised from 0 to 33–58 psig.	Successful operation on 150,000–250,000 scfh. of gas.
Atomic power production	Nuclear reactors		Six private projects for industrial power from atomic fission have been announced, pending AEC approval. These include Consolidated Edison; a New England group; Commonwealth Edison and several others; Detroit Edison and several others; a Nebraska cooperative; a Minnesota cooperative.	None has been approved as of July 1955.
Atomic power production	Nuclear reactors	Government of Great Britain, British Isles	Total of 12 power reactors to be built in 10 years for 1.5–2 million kw. capacity. Program will cost $840 million.	Many feel this crash program will put Britain far ahead in atomic power development.
Atomic power production	Pressurized water reactor	Duquesne Light Co. and AEC Shippingport, Pa.	First large scale test of industrial atomic power generation will produce at least 60,000 kw. of electric power in reactor cooled and moderated with ordinary water at 2,000 psi., making steam at 600 psi.	Being built by Westinghouse, reactor is similar in principle to reactor for Submarine Nautilus. Large scale industry-owned power reactors have been proposed by several groups.
Atomic power reactor tests	Seven reactor types.	AEC industry Various	In early 1954 AEC announced a 5 year power reactor development program to build and test six prototype reactors of five types, including pressurized water, boiling water, sodium cooled graphite-moderated, breeder, homogeneous.	More recently it has been decided also to test the liquid metal fuel reactor proposed by Brookhaven National Labs Hydrocarbon-moderated reactor under consideration.
Catalyst recovery	Revolving screens, sp. gr. separators	Humble Oil & Refining Co. Baytown, Tex.	Size and density separation equipment and techniques used in food industry to separate seed products (grain, peanuts) are being used to separate active from inactive catalytic reforming catalyst.	Gives large reduction in Hydroformer operating costs.
Cement feed preheating	Fuller-Humboldt preheater	Allentown Portland Cement Co. Evansville, Pa.	Heat recovery from dry process cement kilns is accomplished by countercurrent contacting of raw feed and kiln exit gases in a series of cyclone collectors. Several other heat recovery devices also recently introduced.	Plant capacity increased 75% with fuel reduction per bbl. of 30–40%. Process developed in Germany, being licensed to U. S. users by Fuller Co.
Chemical fire protection	Unstable foam	Carbide & Carbon Chemicals Co. Charleston, W. Va.	1–2% Unox in water produces unstable foam that clings to burning material. Foam breaks at 175°F., releases water as needed.	Large scale tests have been successful.
Chemical milling	Etching tank	North American Aviation, Inc. Los Angeles, Calif.	By coating metal parts with special masking coating where action is to be prevented, and immersion in Turco etching solution, smooth and accurate chemical "milling" of metal is obtained.	Process of "Chem-milling" developed jointly by North American and Turco Products, Inc., also of L. A. Used on aluminum but expect to apply also to steel, stainless, titanium. Accuracies of 0.002 in. claimed, at low cost.
Counting airborne particles	Electronic		As airborne particles pass through instrument, they are diluted and the flow rate is controlled. Each particle is illuminated, and reflection detected on photomultiplier tubes. Size is also determined, since large particles reflect more light than small. Particles from 1 to 64 microns can be detected.	Developed by Army Chemical Corps, Camp Detrick, Md.

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MISCELLANEOUS, continued

OPERATION	EQUIPMENT	USER & LOCATION	FEATURES	STATUS & REMARKS
Data reduction.....	Digital loggers.....	Esso Standard Oil Co..... Bayway, N. J.	Digital loggers automatically record large volume of operating data from 100 or more instruments.	Equipment developed by Fischer & Porter, Beckman Instruments, others Other installations being made.
Descaling thermocompression stills	Thermocompression evaporators	U. S. Army, Engineer Research & Development Labs Fort Belvoir, Va.	Anti-scaling studies have shown that frequent descaling with citric acid will maintain clean evaporating surfaces indefinitely.	Studies also show that use of brine stabilization equipment can minimize descaling needs.
Diffusional operations	Plastic tower packing	.....	Packing is shaped as a helix in form of doughnut. Design based on high interstitial holdup rather than wetted surface. Performance is good, even with non-wetting plastics like polyethylene.	Development of A. J. Teller, Penn College, Cleveland. Being marketed as Tellerette by M. A. Knight, Akron.
Drying.....	Superheated vapor dryer	Middle West, U. S.....	Exclusion of air from normal air dryer, with recirculation of superheated vapors from drying materials at atmospheric pressure, shows considerable operating cost saving, with approximate doubling of drying capacity compared to air drying.	Initial installation, built by Wyssmont Co., L. I. City, N. Y., operates on micron sized inorganic material. Expect many granular products to be suitable for this technique.
Dust removal.....	Moving coke bed...	U. S. Bureau of Mines.... Morgantown, W. Va.	Moving bed of coke entrains dust particles from synthesis gas. Operates continuously.	Pilot plant in operation.
Filtration.....	Travelling pan filter.	Davison Chemical Co. Div. of W. R. Grace Co. Bartow, Fla.	New Giorgini pan filter of Dorr Oliver being used for first time in U. S. in Davison's new triple superphosphate plant. Consists of endless series of pans like an apron conveyor.	Five such filters in use in Europe, two more on order for U. S. and Japanese plants. Developed especially for phosphoric acid production. Similar in principle but not in construction to Prayon filter.
Heat-transfer-surface forming	Bonding rolls.....	Olin Mathieson Chemical Corp. East Alton, Ill.	Combination of stop welding, bonding and hydraulic pressure makes it possible to create any tubing pattern within a single sheet of metal (Al, Cu, Cu alloys, stainless steel) that can be roll bonded.	Mass production plant in construction.
Heating small reactors	Fluidized solids bath	Esso Laboratories..... Baton Rouge, La.	Use of fluidized solids heating gives good control of reactor temperatures up to 1,600°F.	Pilot plant.
Ion exchange.....	Continuous.....	.....	Several designs of continuous contactors for ion exchange are in laboratory stage using plug flow, pulsed beds, continuous belts of exchange materials, and the like.	Work has been reported mainly from AEC, colleges, research institutes. Main problem is that plug flow seems necessary except for very favorable equilibrium conditions.
Irradiation.....	Mobile nuclear reactor	.....	Nuclear reactor mounted in boxcar would provide ionization source for catalyzing chemical reactions.	Idea proposed by Brookhaven National Laboratory.
Liquid-liquid extraction	"Folded-channel" contactor	General Electric Co., AEC Knolls Atomic Power Lab, near Schenectady, N. Y.	Developed by GE for AEC work, extractor consists of shallow box divided into parallel channels with pump-like mixing impellers in each channel, settling sections between.	Unit is compact and easily shielded. Interface level is self-controlling. Unit is flexible.

About New Processes & Technology . . .

This sixth annual inventory lists 367 major new processes and technology advances that were announced, commercialized or that made important news during the 24-month period ending July 1955. This list covers only those developments that have been made public and that have reached an advanced stage of development. To make this inventory checklist more valuable as a quick reference for you, we've condensed each item to its hard, factual core.

MISCELLANEOUS TECHNOLOGY, continued

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Liquid-liquid extraction	Liquid carbon dioxide	Socony Mobil Oil Co. Paulsboro, N. J.	Low cost and unusual miscibility relations indicate usefulness in separating hydrocarbons.	Laboratory development.
Liquid-liquid extraction	Pulse columns	.....	Mechanical pulsation of liquids in extraction columns (either sieve-plate or packed) can reduce H.E.T.S. to one-third or less. Pulsation frequencies generally 10–100/min., amplitudes 0.1–1.0 in.	Most of research done by or for AEC. Extent of use in AEC plants unknown
Liquid-liquid extraction	Rotating-disk contactor	Shell Oil Co., and others... Various	Rotating shaft centered in vertical column, carries a number of disks; stationary doughnut rings form series of compartments. High capacity, low H.E.T.S., flexible in operation, easy to maintain.	Several commercial installations in petroleum and chemical operations. Developed by Shell, licensed to Lummus Co. and Turbo Mixer Div. of General American Transportation.
Mechanical separations	Filter	Salt Lake Tungsten Co.... Salt Lake City, Utah.	Modified plate-and-frame filter has two circular frames for each position, secured together 180° apart so one can be swung out to clean while other is filtering.	Eliminates idle time for cleaning. Developed by Blair Burwell of Salt Lake Tungsten, sold as Eimco-Burwell filter by Eimco Corp., Salt Lake City.
Mechanical separations	Liquid cyclone	.....	Small diameter cyclones in 10 and 15 mm. diameters developed for separations in 2–20 micron range. Use 24 or 32 units in parallel. One type has plastic tubes, other is cast en bloc in rubber.	Developed by Dorr Oliver, Inc., called Type TM cyclones.
Mixing, high frequency	Mechanical Polytron mixer	.....	Developed by Prof. P. Willems, of Soleure, Switzerland, and used fairly widely in Europe, mixer exerts shear, shock, impact and attrition at frequencies to over 200,000 cycles/sec.	Claimed to accelerate various reactions such as paper pulping, varnish making, with remarkable decrease in time for completion.
Nuclear energy production	Carbon fission reactor	.....	Would increase by at least 8,000 times the usable energy from carbonaceous fuels.	Highly speculative, but reported to be encouraged by military sources. Proposed by Harry Hardsog. Fairchild Engine & Airplane Corp. said to be backing investigation.
Plant design	Photographed models	.....	Photograph of scale model is dimensioned and used as engineering drawing. Technique utilizes preformed components, magnetically mounted equipment.	Photographic techniques available for licensing. Offered by Parco Co., New York.
Polymerization	Radioisotope radiation source	Various	Experimental uses being reported from various sources on use of radioisotopes in catalyzing polymerizations, or in reducing temperature and pressure requirements with present catalysts.	Appears to have advantages over other forms of radiation in speeding some reactions. Can make some polymers never before made, make others (e.g., polyethylene) under less severe conditions. Can vulcanize rubber without sulfur.
Power generation	Oxy-hydrogen cell	.....	Galvanic cell with nickel electrode generates electric current from reaction of oxygen and hydrogen in KOH electrolyte. Much lighter than conventional lead-acid cells.	Developed in Britain.
Power rectification	Germanium rectifier	.....	Germanium rectifiers for 50–125 v. range operate without contacts, have longer life than mechanical rectifiers.	Made by General Electric. One in use on electrolytic hydrogen, another on tin electrolysis.
Power rectification	Silicon rectifier	.....	Operates at 98% efficiency up to 200° C., whereas germanium rectifier is inefficient above 60° C.	Developed by Westinghouse Electric Corp.
Power recovery	Turbo-expander	Mississippi Chemical Co., and others Yazoo City, Miss.	Pressure of waste gas from nitric acid plant will be recovered by compressor-expander. About 75% of power needed for compression will be recovered.	Cost of turbo expander will be paid out in four years.
Pollution control studies	Fluorescent tracer	Ralph M. Parsons Co. Los Angeles, Calif.	For studies of Los Angeles smog problem, Parsons is using fluorescent powder dispersed into air, and collected at various points on special filters. Study of filters under ultraviolet shows where pollutants go.	Process developed at Stanford Research Institute. Tracer use of fluorescent dusts has advantages over radioactive tracers where large areas are to be covered.
Process steam raising	Hydrocarbon gas turbine	Esso Standard Oil Co. A major refinery	Turbine will develop 5,700 hp. and drive a 16 stage centrifugal compressor to compress hydrocarbon gas from 1 atm. to 285 psig. Using natural gas as fuel, turbine will exhaust to waste heat boiler to produce process steam.	Used for first time in 1954.
Pumping	"Canned rotor" pumps	Atomic Energy Commission, others	For atomic power installations, several "canned rotor" pumps have been developed by concerns such as Westinghouse, Byron Jackson, Allis Chalmers. Such motors have no packed shafts, hence no leakage.	Smaller scale "canned rotor" pumps for chemical plant service being put out by Chempump, Philadelphia.

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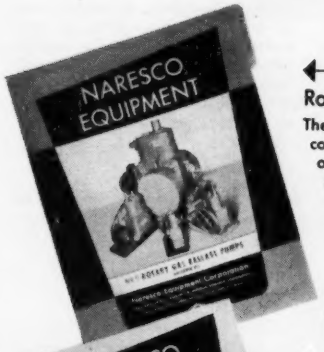
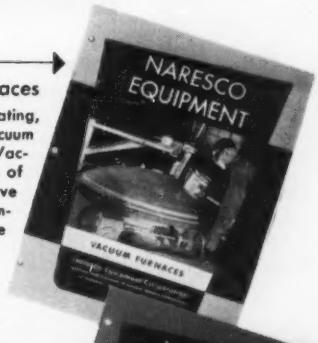


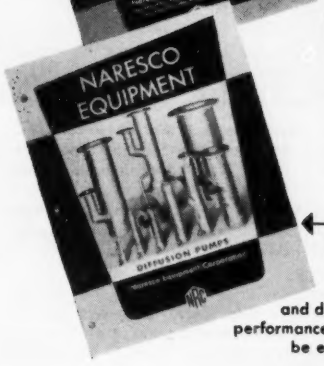
Rotary Gas Ballast Pumps

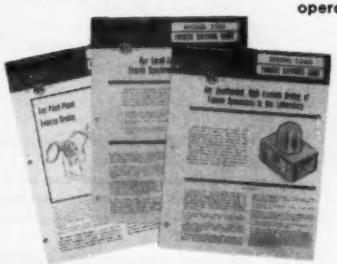
These sturdy, efficient pumps overcome the problem inherent in all other types: loss of efficiency in the presence of the slightest humidity. NRC pumps maintain peak efficiency even when pumping 100% water vapor.

NRC Vacuum Furnaces

For vacuum brazing, heat treating, sintering, and production of vacuum melted "Ultra Alloys", NRC Vacuum Furnaces, with capacities of 2 to over 2,000 pounds, have special features that assure simplified, efficient, dependable operation.

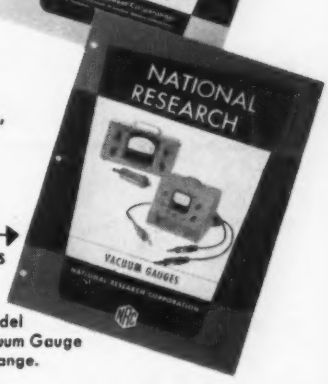






Freeze Drying Equipment

Designed for reliability and operator convenience, the complete Freeze Drying line includes laboratory, pilot plant and production sized models.



NRC Diffusion Pumps

Unusually easy to maintain and long-lived, these booster and diffusion pumps maintain their high performance despite normal variations to be expected in operating conditions.

NRC High Vacuum Gauges

Outstanding among NRC's line of Thermocouple, Ionization, and Pirani Gauges is Model 517 Alphatron®. Ionization Vacuum Gauge with a 10^{-4} to 1000 mm. Hg. range.

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MISCELLANEOUS TECHNOLOGY, continued

PRODUCT	PROCESS	USER & LOCATION	FEATURES	STATUS & REMARKS
Radiation induced reactions	Gamma radiation (cobalt 60)	Esso Research & Eng. Co. Linden, N. J.	New $250,000 lab opened Apr. 1955 to investigate possibility of using gamma radiation for inducing cracking, polymerization and other reactions without, or with reduced catalysts, and lower temperature, pressure.	If initial success is indicated, Esso may spend $5–20 million on this research. Others planning to study gamma include Diamond Alkali, Battelle, Stanford Research.
Solar energy conversion	Solar battery.....	.....	New solar battery transforms 6% of total incident light energy directly into electrical energy. Battery consists of wafer thin silicon strips, each with a thin (less than 0.0001 in.) layer of boron. Conversion rate is 6 watts/sq. yd. of battery surface.	Developed by Bell Telephone Laboratories. In experimental state.
Solar energy conversion	Solar battery.....	Wright Air Development Center Dayton, Ohio	New solar battery converts solar energy to electricity through crystal cadmium sulfide. The barrier layer cell consists of a positive electrode of silver on one side of the cadmium sulfide crystal and a negative electrode of indium on the other.	Developed by WADC. In pilot model, ½ sq. in. area produced ½ volt.
Solar heating, high temperature	Solar furnace.....	Consolidated Vultee Aircraft Corp. San Diego, Calif.	8,500° F. temperature for materials testing is attained by parabolic reflector 120 in. in diameter, concentrating solar radiation.	Being used to test metals and ceramics without interference from combustion products or electric or magnetic fields. Gives highest temperatures regularly available at present.
Steel cladding.....	Vacuum brazing furnace	Chicago Bridge & Iron Co. Birmingham, Ala.	Thin sheet of copper or copper alloy is sandwiched between steel base and cladding metal. vacuum applied at brazing temperature.	Trade-named Hortonclad, product is mechanically equivalent to conventional hot-rolled clad steels.
Sterilization.....	Electron beam.....	Bradley Container Corp... Maynard, Mass.	Plastic containers, either filled or empty, are sterilized with beam from 2 million-volt particle accelerator.	In commercial operation.
Thickening.....	Mesh stirrers.....	.....	French Gelsol process said to improve thickener operation by use of lattice or mesh stirrers moving at very slow speed in thickener compression zone. Can be installed in conventional thickeners.	Claim increase in density of thickener underflow, e.g., 25% on bauxite mud, at same throughput rate; or 75% higher throughput at same concentration. Offered in U. S. by Chemical Projects Associates, New York.
Waste disposal.....	Chemical cyanide removal	Oneida, Ltd..... Oneida, N. Y.	New process chemically converts cyanide wastes to CO_2 and nitrogen by hypochlorite oxidation. Settling, skimming and filtration steps complete the purification.	20,000 gph. plant in operation. Designed by Oneida, Yale University and Wescott & Mapes.
Waste disposal.....	Dephenolization....	Koppers Co..... Follansbee, W. Va.	Fortified oil extracts phenol from tar process waste water; caustic soda then extracts phenol from oil. Phenol content is reduced to 0.005%.	$500,000 plant. now on stream, can handle 200,000 gpd. of process water, double the necessary capacity.
Waste disposal.....	Sodium cyanide decomposition	Trubek Laboratories..... Rutherford, N. J.	Waste sodium cyanide is heated at 160–170° C. for 6–7 hr., decomposing to NH_3 and sodium formate. Cyanide reduced to 3–4 ppm.	In operation.
Waste disposal	Thermophylic digestion	Coors Brewing Co..... Golden, Colo.	Plant effluent is treated by oxidation, digestion at 130° F., pressure flotation. Result is smaller equipment, shorter treatment time and lower cost.	In operation since summer 1953. First such process used in U. S.
Waste disposal.....	Wet combustion....	Hammermill Paper Co.... Erie, Pa.	Waste pulp liquor is oxidized with air at 480° F. and 800 psi. Organic chemicals oxidize to CO_2 and water. Energy can be recovered via steam turbine.	Commercial-scale trial unit in operation. Developed by Salvo Chemical Co. Called Zimmermann process. Unit built by Dravo Corp.
Waste heat recovery.	Tangential furnace..	Sinclair Refining Co..... Houston, Tex.	Flue gas from cat cracker regenerator is fired with auxiliary gas fuel in tangential furnace, producing saturated steam which is superheated in coils in fluidized bed of kiln.	Auxiliary heat supplies 20%, waste heat 80% of heat for all needed superheated steam.
Waste neutralization.	Water jet nozzles...	Du Pont Co..... Deepwater Point, N. J.	Waste lime sludge from acetylene plants is sluiced down with water jets to a reservoir, then pumped to neutralizing tanks to neutralize acid wastes.	New lime source, practically free, is equally as effective as pebble lime.
Waste solids recovery	Gibbs flotation unit.	Gelatine manufacturer....	Protein particles recovered from gelatine plant waste waters, otherwise non-washable, can be acid and water washed in additional Gibbs units.	Flotation agents not needed; entrained air bubbles float fine solids to surface skimming. Increases gelatine yield nearly 2%.
X-ray inspection....	.....	.....	First prototype of newest X-ray development, xeroradiography. This technique uses static electricity to produce an image on a coated aluminum plate.	Development of research by General Electric and Haloid.
X-ray inspection....	Portable.....	Argonne National Laboratory Illinois	A small portable X-ray unit has one-fifth gram of thulium-170 as active component. Is comparable to a 100,000-v. X-ray machine.	Developed by Argonne National Laboratory; in use at the laboratory.

FAMOUS LIGHTHOUSES OF AMERICA

STANNARD ROCK LIGHTHOUSE, Lake Superior, Michigan, is located about 23 miles southeast of Manitou Island. Completed in 1883, the stone tower is built on a base of concrete and stone which stands on solid rock in 11 feet of water. The light, 102 feet above water and visible for 18 miles, protects shipping in a dangerous area on the heavily traveled trade route between Duluth and the lower lakes.

Protection for the quality of your products and the efficiency of your processes is provided by the uniformly high standards of Niagara Alkali Company products. Depend on the purity and uniformity of Nialk® Liquid Chlorine, Nialk Caustic Potash, Nialk Carbonate of Potash, Nialk Paradichlorobenzene, Nialk Caustic Soda, Nialk TRICHLORethylene, Niagathal® (Tetrachloro Phthalic Anhydride).

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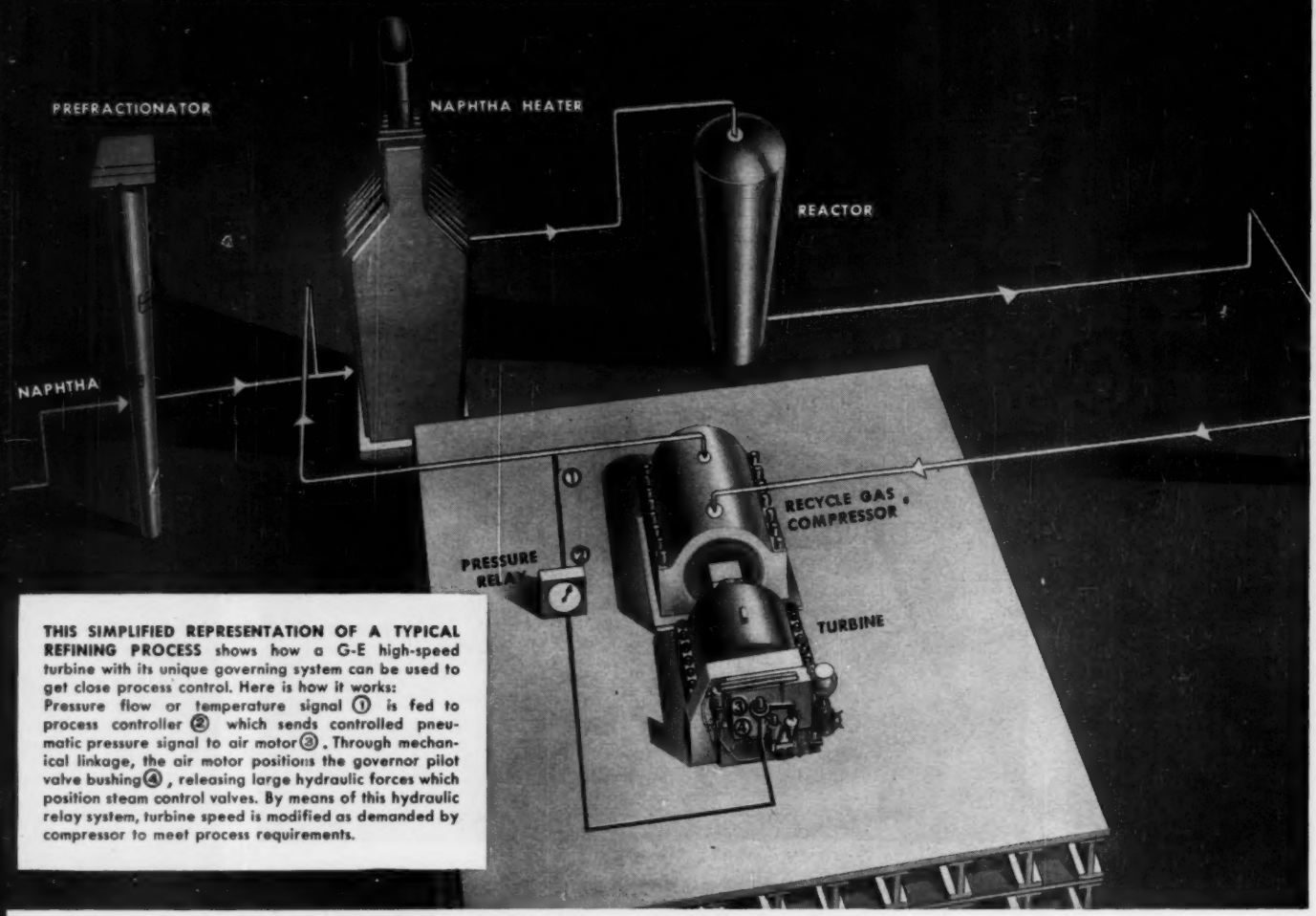
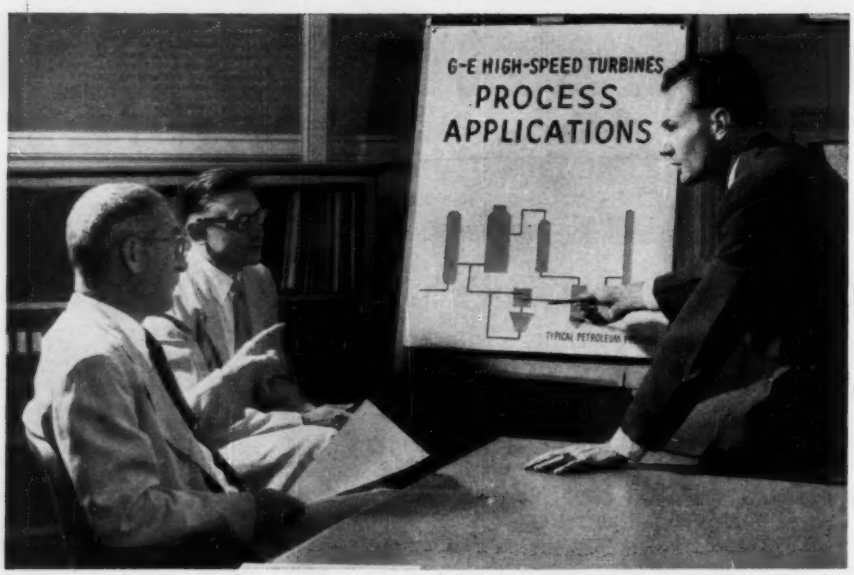


THIS SIMPLIFIED REPRESENTATION OF A TYPICAL REFINING PROCESS shows how a G-E high-speed turbine with its unique governing system can be used to get close process control. Here is how it works: Pressure flow or temperature signal ① is fed to process controller ② which sends controlled pneumatic pressure signal to air motor ③. Through mechanical linkage, the air motor positions the governor pilot valve bushing ④, releasing large hydraulic forces which position steam control valves. By means of this hydraulic relay system, turbine speed is modified as demanded by compressor to meet process requirements.

EASILY INCORPORATED INTO YOUR PRESENT SYSTEM . . .

G-E position-restored turbine governing

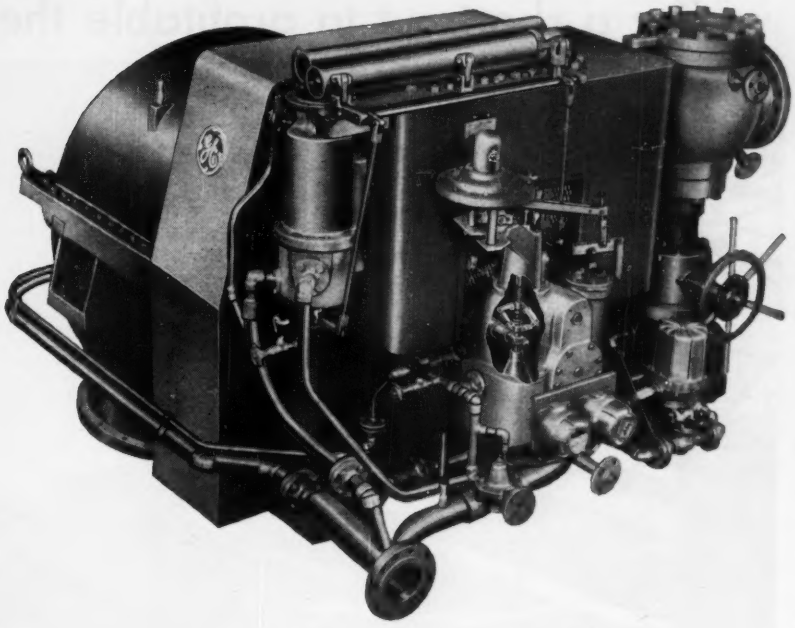


HERE IS THE SMALL TURBINE AND SUPERCHARGER DEPARTMENT MARKETING TEAM that can show you how to apply all the advantages of G-E high-speed turbine governing to your process operations. R. E. Donnelly, Manager—Marketing, discusses a possible petroleum application with H. J. Chase, Manager—Engineering, at left, and C. B. Seelig Manager—Sales, center.

HIGH-SPEED TURBINES FOR ALL PROCESS APPLICATIONS

- PETROLEUM
- CHEMICAL
- PETROCHEMICAL
- STEEL

TURBINES FOR HIGH-SPEED COMPRESSORS . . .



THE GENERAL ELECTRIC POSITION-RESTORED GOVERNOR, shown cutaway above, utilizes the best features of both mechanical and hydraulic control. Heart of the system is a fly-ball-positioned, rotating pilot valve, which releases a tremendous store of power to position the steam inlet valves. The released power is controlled through feedback by a weight-biased mechanical-linkage that repositions the pilot-valve bushing only in direct response to movement of the steam-inlet valves, rather than in response to a force generated by the movement of the valves.

can give you close process control

In process industries, if quality-control and peak production are to be maintained, turbines that drive high-speed compressors and blowers must have close, accurate governing in response to load requirement and the slightest variations in steam conditions.

To help you get more precise control, all G-E high-speed turbines have a position-restored governor. It is an oil-relayed, mechanical-type control device that automatically matches turbine speed to process demands.

This governor will operate accurately and effectively with any recycle controlling system because the mechanical-linkage can be adjusted to match the complete output-signal range of any process controller. The G-E governor can be incorporated with a typical control system as shown in the schematic drawing.

FOR CLOSE PROCESS CONTROL the unique design of the G-E high-speed turbine governor offers these advantages:

Accurate signal relay results since speed changes are made through a weight-biased mechanical-linkage which repositions the pilot valve bushing only in direct response to movement of the steam-inlet valve. The system is not affected by oil-flow forces and is quick to respond to changes in process requirements.

Direct, precise speed settings are therefore possible because turbine response to process requirements is not dependent on force balance between springs and signal pressure.

Completely integrated governing responds not only to process demand but also to steam pressure or temperature changes, which must be factored in for close process control.

Position-restored governing keeps the system in near-perfect equilibrium, practically eliminating speed surges and turbine "hunting." Be sure to see how this governing system may be used to advantage in your process operation.

For more detailed information, contact your nearest General Electric Apparatus Sales Office or write General Electric Company, Schenectady 5, N. Y. In Canada, contact Canadian General Electric Company, Limited, Toronto. 241-3

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GENERAL ELECTRIC

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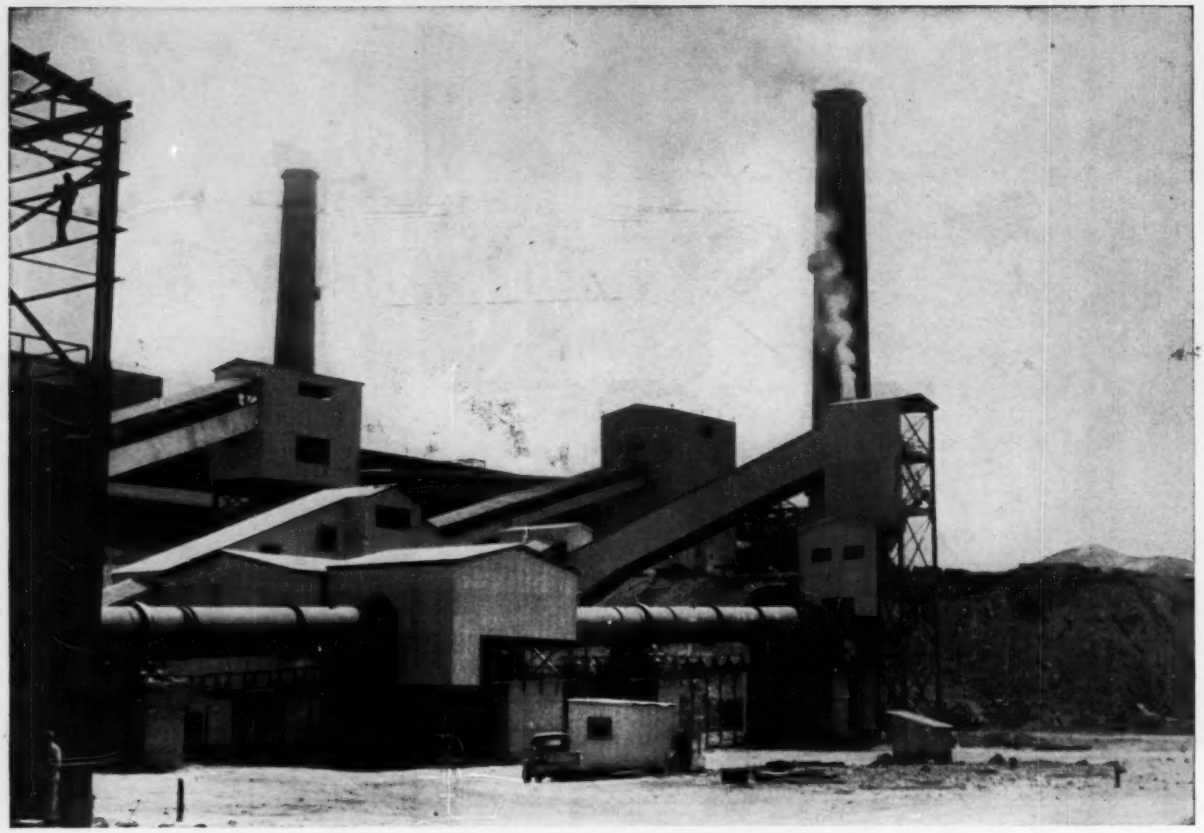
offer a short-cut to profitable thermo-processing



OVER 150 TRAYLOR KILNS are your best assurance of an efficient installation

Traylor has built over 150 Rotary Kilns since 1941 . . . an average of almost one a month for 14 years. Their combined length is over 33,000 feet. This adds up to more than 6 miles of kiln building "know-how" for Traylor.

Kilns have been "Traylor-made" for processing some 21 different products. The answer to many new thermo-processing problems has been found in Traylor's accumulation of kiln-building experience. If you are responsible for efficient thermo-processing in your plant, take the short cut to a profitable installation. Avoid the long costly way of trial and error. Have a kiln "Traylor-made" for the job. Write for bulletin 1115 today.

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Plants 7
Processes . . 33
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This Section ▶

201 PRODUCTS . . . CE's inventory of new chemicals and materials . . . carefully screened for their specific interest to chemical engineers in industry . . . properties, uses, where you can get them now.

HERE is CE's second annual inventory of new chemicals and materials. It lists some 200 new or newsworthy items of practical interest to chemical engineers. It is not intended to be a listing of research, specialty or consumer products. All materials included in this inventory have been carefully screened by our editors for publication in the August 1954—July 1955 issues of CE. For more information on any item, write its code number on one of the Reader Service postcards, then mail to us.

1955 INVENTORY

New Chemicals and Materials

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• Agricultural Chemicals

Agri-mycin

Terramycin-streptomycin spray. (78A)

. . . Agri-mycin boosted tomato yields by 154 bushels per acre and pepper yields as much as 67% by controlling bacterial spot, a crop disease. Three years of field testing have demonstrated Agri-mycin's effectiveness against such plant plagues as apple and pear fire blight, soft rot of potatoes, blue mold and wildfire of tobacco.—*Chas. Pfizer & Co., Inc., Brooklyn, N. Y.*

Defoliant

For cotton. (78B)

. . . Magron, a cotton defoliant (magnesium chlorate) is used for late summer harvesting. Successful field testing for a year has resulted in its commercial production.—*Dow Chemical Co., Freeport, Tex.*

Fumigant, Soil

Controls soil-borne diseases. (78C)

. . . General purpose soil fumigant, Vapam, controls soil-borne diseases, nematodes, growing weeds and weed seeds. It is also effective against certain species of soil infesting insects and related pests. Vapam, N-methyl dithiocarbamate, is highly soluble in water, can be applied easily to the soil.—*Stauffer Chemical Co., Mountain View, Calif.*

Herbicide

Nonselective. (78D)

. . . Baron herbicide is highly effective against almost all perennial grasses as well as herbaceous plants. Chemically, Baron's active component is unique: both parts of the two-part molecule exert herbicidal action, each toxic to its own range of vegetation.—*Dow Chemical Co., Midland, Mich.*

Insecticide

Kills DDT-resistant insects. (78E)

. . . Dimethyl dichloro vinyl phosphate is proving deadly to flies and insects with natural or acquired resistance to DDT. Less toxic than other organic phosphorus insecticides, DDVP is especially suitable—because of its high volatility—for crops where insecticide residues are objectionable. DDVP is ten times more potent than its parent compound, a commercial organic phosphorus material.—*Public Health Service, Savannah, Ga.*

Insecticides

Deadly to cotton pests. (79A)

. . . Early field tests on two insecticides, Compound 16259 and Toxaphene, proved that both are deadly to such pests as the boll weevil, cotton aphid, pink bollworm and spider mites. Compound 16259, at one pound an hour rate, gave 100% boll weevil control in June, 96% in October. Toxaphene, at two pounds an acre, gave only 66% weevil control in June and 54% in October.—*U. S. Dept. of Agriculture, Washington 25, D. C.*

Organotins

Rival DDT's potency. (79B)

. . . Some organotins have combined fungicidal and insecticidal properties. Such combination of properties in one compound may provide a series of substances each designed specifically to kill fungus and insect life selectively and quickly.—*Tin Research Institute, Middlesex, England.*

Pesticide Emulsifier

Approaches ideal. (79C)

. . . Toximul 500, approaching an all-purpose emulsifier, handles at least a dozen toxicants, using only 3-4% of emulsifier over a range of water hardness of 50 to 1,000 ppm.—*Ninol Laboratories, Inc., Chicago 16, Ill.*

Weed Killer

For nut grass. (79D)

. . . Hexachloroacetone, a weed killer, is effective on Johnson and nut grass. Samples are available for country-wide evaluation. Commercial production is planned.—*Allied Chemical & Dye Corp., New York 6, N. Y.*

Weed Killers

Alpha-chloroacetamides. (79E)

. . . Alpha-chloro-N,N-diallylacetamide and -N,N-diethylacetamide give good grass control—giant foxtail, crabgrass, broadleaf weeds, etc.—at rates of 3-6 lb. per acre. Although tested in widely scattered plots with good results, both compounds will need another year of cooperative field trials before sale will be permitted.—*Monsanto Chemical Co., St. Louis 4, Mo.*

• Bonding Agents

Adhesive, Epoxy Resin

Replaces soft solder for steel bonding. (79F)

. . . Araldite 115, an epoxy resin adhesive, has tensile strength equal to that of soft solder. The army uses it to replace soft solder in the bonding of galvanized steel screens to cold rolled steel shrouds in bomb tail-fin assemblies. Araldite may reduce this operation cost by as much as 50%, while saving critical tin and lead materials.—*Business Defense Services Administration, Dept. of Commerce, Washington 25, D. C.*

Adhesive, Resin

Permits easy reuse of waste paper. (79G)

. . . Resyn 60R-3132 is a polyvinyl acetate emulsion soluble in alkaline deinking solutions. Manufacturers of paper products can use it in processing and still get premium prices from paper mills for returned production cutting. Mills formerly reluctant to reprocess waste paper containing insoluble resin adhesives can now utilize a large source of paper raw materials.—*National Adhesives Div., National Starch Products Inc., New York, N. Y.*

Adhesive, Silicone Rubber

Bonds to Al, Mg, rubber. (79H)

. . . Dow Corning A-4000 sets up without pressure in 24 hours at room temperature—maximum strength in 3-7 days. Bonds exhibit heat and creep resistance through 100 C.—*Dow Corning Corp., Midland, Mich.*

Adhesives, Structural

One for high strength, other for flexibility. (79I)

. . . Bondmaster M615, for metal-to-plastic adhesion at normal temperatures, yields shear strengths of 3,500 psi. with peel strengths up to 19 lb. Bondmaster M616 joins metal-to-metal, providing shear strengths of 3,000 psi. at 180° F. sans flexibility loss.—*Rubber and Asbestos Corp., Bloomfield, N. J.*

Tape, Adhesive

Holds over wide temperature range. (79J)

. . . Scotch Tape No. 540—combining Teflon film with pressure-sensitive silicone adhesive—defies temperature changes from —65 to 350 F. Tensile strength is 15 lb. per in. of tape width, elongation is 300%. It resists many reactive chemicals.—*Minnesota Mining and Mfg. Co., St. Paul, Minn.*

BONDING AGENTS, continued

Tape, Packaging

Pressure-sensitive. (80A)

. . . P-17 tape, paper-backed, of high strength, impregnated with waterproof rubber resin, withstands rough handling in shipment under dry and wet conditions. Unlike gummed tape, it needs no activating solvent. Uses: carton sealing, splicing paperboard.—*Permacel Tape Corp., New Brunswick, N. J.*

• Lubricants

Grease, All-Purpose

For industry, home. (80B)

. . . Esso Multi-Purpose Grease H has unique fibrous or stringy structure. It keeps dirt and water out of bearings, water pumps, etc. and clings to the part lubricated.—*Standard Oil Development Co., New York 19, N. Y.*

Lubricants, Dry-Film

Epoxy-based dispersions of graphite and molybdenum disulfide. (80C)

. . . 'Dag' Dispersion No. 213—containing colloidal graphite—and 'dag' Dispersion No. 223—containing molybdenum disulfide—are two epoxy-based compounds for dry lubricating coatings. Films formed with these dispersions show excellent adhesion, wear resistance; are unaffected by oils, solvents; are usable at temperatures up to 500 F. Films impart corrosion resistance as well as lubrication.—*Acheson Colloids Co., Port Huron, Mich.*

Silicone Lubricant

Defies 107,000 psi. bearing pressures. (80D)

. . . Silicone lubricant permits "seizure" or welding between parts of a metal ball at pressures greater than 107,000 psi.—high for a silicone product. Lube also passes thermal stability and viscosity tests at temperatures from —65 to 500 F.—*Westinghouse Electric Corp., Pittsburgh 30, Pa.*

Synthetic Lubricant

Lubricates at 86 psi. and 600 F. (80E)

. . . T/S 25, synthetic lubricant, does a job that no mineral oil can do. It lubricates a giant pressure regulator—Cochrane 24-in. multiport relief valve —operating at 86 psi. and 600 F. T/S 25 is expected to serve the valve's moving parts for life, if need be.—*Tri-State Petroleum Co., Philadelphia, Pa.*

Thickeners, Silica-Based

For grease manufacture. (80F)

. . . Water- and heat-proof greases are producible with a class of silica-based thickeners called estersils. Greases built around estersils have mechanical stability and show very little change of consistency with temperature.—*E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del.*

• Maintenance Chemicals

Amines, Volatile

Film-forming, improve heat transfer and reduce corrosion. (80G)

. . . Hagafilm is a leader among volatile, film-forming amines which, when injected continuously into feed water for low-pressure boilers, vaporize with the steam and deposit a non-wettable, protective film on metal surfaces wherever condensation occurs and throughout the return system as well. Although primarily designed to shed corrosive attack by oxygen and carbon dioxide dissolved in the steam condensing equipment, amine "raincoats" also increase chances for drop-wise—rather than film-type—condensation . . . and the better heat transfer that goes with it. This plus minimum formation of heat insulating corrosion products makes for overall energy and/or equipment savings. Since its debut in 1950, Hagafilm has successfully treated more than 100 billion pounds of steam. Large and small firms—chemical, textile, pulp and paper, electrical —all over the country use Hagafilm. Generous cross section of 25 firms using Hagafilm in 2 or more branch plants shows that corrosion rates are down 90% or more and heat transfer is significantly improved. Hagafilm is supplied in solid form or as a ready-mixed liquid emulsion.—*Hagan Corp., Pittsburgh 30, Pa.*

Cement, Fast-Setting

Sets in less than 1 hr. (80H)

. . . Garonite cement's 1-hr. compression strength exceeds 5,000 psi., increasing to more than 12,000 psi. in 24 hr. Cement gives shrinkproof union between machines' parts.—*Garon Products Co., Philadelphia 7, Pa.*

Chlorobenzene

Solvent-cleaner. (81A)

. . . Water-dispersible chlorobenzene solvent-cleaner and odor suppressant, Orthosolv, is first product of its type available at practical price. It removes soft carbon deposits from motor parts, tars from cars, oils and greases from concrete floors, grease and offensive odors from refuse containers and trucks. —*Solvay Process Div., Allied Chemical & Dye Corp., New York 6, N. Y.*

Cleaner

For water wells. (81B)

. . . Welton, "package" cleaner, does complete job of well maintenance by itself, requiring no supplementary chemicals. It contains Calgon water conditioner, disinfectant, wetting agent. —*Calgon Inc., Pittsburgh 30, Pa.*

Detergent, Industrial

Contains no caustic; is nontoxic, nonflammable. (81C)

. . . Planisol, a general purpose detergent, emulsifies all fats and oils and can be used for range of jobs—from cleaning large vessels heavily encrusted with polymerized oil to sanitizing food processing equipment. It cleans, but doesn't attack, aluminum. Although highly alkaline, Planisol contains no caustic, can be safely handled.—*The Girdler Co., Louisville, Ky.*

Hydrazine, Hydrated

Is oxygen scavenger for boiler feedwater. (81D)

. . . Boiler feedwater treatment with hydrazine hydrate is on the increase because: hydrazine doesn't interfere with pH control of boiler water, hydrazine compounds don't add to total dissolved solids in boiler water (they decompose to N_2 and water . . . or ammonia), treatment is no more expensive than others, is safe.—*Olin Mathieson Corp., Baltimore 3, Md.*

Oil Well Opener

Breaks water block, swells petroleum potential. (81E)

. . . Atpet 931, a non-ionic chemical detergent, stimulates old wells, restores dead ones and completes new ones blocked by water. It releases interfacial tension between the oil and water, permitting oil flow again through the strata. Atpet 931 is also used in completions, fracturing, cementing and well logging.—*Atlas Powder Co., Wilmington 99, Del.*

Preservative Oils

Prevent rusting. (81F)

. . . Two-phase rust-proofing protection of internal metal surfaces in closed or semi-closed systems is possible with a series of preservative oils, Nucle-oils. These combine protective properties of inhibited oils with those of oil-soluble, volatile rust inhibitors. The latter vaporize from the oil to protect surfaces above oil level.—*Daubert Chemical Co., Chicago 1, Ill.*

Remover, Paint

Nonflammable. (81G)

. . . Glid-Strip paint remover acts quickly to soften paints and varnishes, including latex and baked enamel finishes. It is nonflammable, remains wet and active up to six hours.—*The Glidden Co., Cleveland, Ohio.*

Remover, Rust

Works in 2 steps: dip and pressure rinse. (81H)

. . . Rustgon, a non-electrolytic alkaline cleaner, strips rust, acid-proof paint, baked lacquer, red oxide primer from ferrous metal surfaces. Parts are immersed in Rustgon hot tank, then rinsed with air, water or steam. Precleaning, neutralizing, dipping for rust prevention are unnecessary. Rustgon contains no cyanides, emits no corrosive fumes, can be used as received without dilution or mixing. Slightly pitted rust is removed in less than a minute, heavy rust and multiple coatings of paint require only a few minutes' immersion.—*Turco Products Inc., Los Angeles 1, Calif.*

Silicones

For waterproofing concrete surfaces. (81I)

. . . Silicones will be used to treat all bridge decks carrying New York State Thruway traffic. By waterproofing concrete surfaces, silicone should materially lessen long-range highway maintenance costs. Untreated concrete exposed to freeze-thaw cycles may fail by spalling, particularly in presence of salt chemicals used for ice control. Silicone spraying doesn't make surface slippery even during or after rainfall. Because silicone-treated concrete doesn't darken-by-wetting on exposure to water, it's much more visible to motorists in rainy weather.—*General Electric Co., Pittsfield, Mass.*

Clip and Save for Ready Reference

...TS ABOUT

MAINTENANCE CHEMICALS, continued

Sodium Nitrite

Finding increased value as corrosion inhibitor. (82A)

. . . Sodium nitrite is getting ever-widening play as a semi-permanent, rust-resistant, film-former for iron and steel in neutral or alkaline solutions. It prevents corrosion in circulating water systems, water base paints, stored oil products, metal containers, metal cutting and grinding compounds, boiler feedwater. In combination with caustic soda it both protects and cleans oil product pipelines and tanks in light oil service. Where more than temporary protection is in order, combinations of sodium nitrite with sodium phosphate give coatings which are thirty times more resistant to water washing. —*Solvay Process Div., Allied Chemical & Dye Corp., New York 6, N. Y., E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del.*

Solvent, Chlorinated

Serves small industry. (82B)

. . . Chlorothene (1,1,1-trichloroethane) is for the small business that needs only a few gallons of cleaning solvent a month and can't afford special handling equipment. A "bucket" solvent, Chlorothene is one of the least toxic of chlorinated solvents.—*Dow Chemical Co., Midland, Mich.*

Waterproofer

Silicon resin, prolongs masonry's life. (82C)

. . . Application of Dri-Film 103 silicone water repellent reduces efflorescence, spalling and cracking of brick, concrete, mortar, other masonry surfaces. Peeling and flaking of interior walls is minimized since repellent resists passage of moisture through masonry and against inner wall paint. Treated brick absorbs only 0.01% moisture after immersion in Dri-Film for one week.—*General Electric Co., Pittsfield, Mass.*

Well Injection Aids

Quarternary ammonium compounds kill bacteria. (82D)

. . . Arquad T 2C, mixture of two quaternary ammonium salts of amines —one, a bactericide; the other, a corrosion inhibitor—eliminates sulfide-producing bacteria, reduces bacteria-caused corrosion (by 95%) in oil recovery operations. Mix is being used—at reasonable costs—in flooding jobs in Texas, Indiana, Kentucky, Oklahoma, California.—*Armour & Co., Chicago 9, Ill.*

• Organic Chemicals

ACTH, Fractionated

Brings commercial synthesis closer. (82E)

. . . Fractionation of the immensely complex ACTH molecule and analysis of its most abundant component brings commercial synthesis into the realm of possibility. All eight ACTH fractions are equally active, perform therapeutically (as does parent compound). This leads to hope that further fractionation will give components both small and simple enough to be within the scope of chemical synthesis and—at the same time—still show physiological activity.—*American Cyanamid Co., New York 20, N. Y.*

Alcohols, Fatty

Unsaturated. (82F)

. . . Two fatty alcohols, Makanol 8 and 9, claim greater percentages of unsaturation—88 and 91, respectively—than any other commercially available long chain alcohols.—*Stepan Chemical Co., Chicago 6, Ill.*

Alkylanilines

Intermediates for organic syntheses. (82G)

. . . Two alkylanilines—alkylaniline C-5 and alkylaniline C-12—are available in pilot plant lots as intermediates for synthesis of petroleum, agricultural and pharmaceutical chemicals, and as precursors for isocyanate and thiourea derivatives. C-5 alkylaniline has an average of 5 carbons in the ring-substituted alkyl group; C-12 alkylaniline has an average of 12 carbons.—*Monsanto Chemical Co., St. Louis 4, Mo.*

Anilines, N-Substituted

Superior to lower homologs. (82H)

. . . N-butyl and N-2-ethylhexyl anilines have advantages over aniline and lower N-alkylanilines: lower water solubilities, higher solubilities in oil and hydrocarbons, lower vapor pressures, lower toxicities and milder odor.—*Carbide and Carbon Chemicals Co., New York 17, N. Y.*

Bisphenol, Cashew

Resin intermediate. (82I)

. . . Cardolite 6463 is a cashew bisphenol with molecular weight (410) nearly twice that of usual bisphenol. When used as an epoxy resin intermediate, only half as much epichlorhydrin is needed. Once cured, resins have greater flexibility.—*Irvington Varnish Insulator, Irvington 11, N. J.*

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FAST FACTS ABOUT genetron® Super-Dry Refrigerants

"Genetron" *Super-Dry* Refrigerants are made by General Chemical Division, Allied Chemical & Dye Corporation, one of America's great producers of industrial and scientific chemicals for more than 50 years. Long a leader in fluorine chemistry, General has the mines, resources, reserves, experience and production facilities that make it a reliable source of fluorinated hydrocarbon refrigerants.

Careful control in the manufacture of "Genetron" refrigerants guarantees products of the highest quality, extremely low in moisture and other impurities. "Genetron" Refrigerants are identical and interchangeable in all respects with comparable fluorinated hydrocarbon refrigerants produced by any other manufacturer meeting the same high quality refrigerant standards and specifications. They have been tested exhaustively by major manufacturers and are being used in their air conditioning and refrigeration equipment.

- **Guaranteed: Exceptionally low moisture content**
- **Non-corrosive to standard equipment materials**
- **Non-toxic, non-flammable, stable, safe**
- **Critical and freezing points well outside range of operating uses**
- **Solvent action on oil helps prevent solidification or congealing of lubricant**
- **Miscible with oil; aid in lubrication of equipment**

genetron 11 ORANGE LABEL — **Trichloromonofluoromethane**

genetron 12 WHITE LABEL — **Dichlorodifluoromethane**

genetron 141 GREEN LABEL — **Monochlorodifluoromethane**

Selected Physical Data

	CCl_3F	CCl_2F_2	$CHClF_2$
Chemical Formula			
Molecular Weight	137.4	120.9	86.5
Boiling Pt. (°F) at 1 Atmosphere Pressure	74.7	−21.6	−41.4
Evaporator Pressure at 5°F (p.s.i. absolute)	2.93	26.52	43.02
Condensing Pressure at 86°F (p.s.i. absolute)	18.3	108.0	174.5
Freezing Point (°F) at 1 Atmosphere Pressure	−168.0	−247.0	−256.0
Critical Temperature (°F)	388.4	232.7	204.8
Critical Pressure (p.s.i. absolute)	635	582	716
*Compressor Discharge Temperature (°F)	113	102	131
Compression Ratio (86°F/5°F)	6.24	4.08	4.06
Liquid Viscosity at 5°F (centipoises)	0.650	0.328	0.286
Liquid Viscosity at 86°F (centipoises)	0.405	0.251	0.229
Vapor Viscosity at 1 atm. and 5°F (centipoises)	0.0096	0.0114	0.0114
Vapor Viscosity at 1 atm. and 86°F (centipoises)	0.0111	0.0127	0.0131
Saturated Liquid Density at 5°F (lbs./cu. ft.)	97.88	90.00	83.34
Saturated Liquid Density at 86°F (lbs./cu. ft.)	91.38	80.63	73.36
Saturated Vapor Density at 5°F (lbs./cu. ft.)	0.0815	0.6735	0.8034
Saturated Vapor Density at 86°F (lbs./cu. ft.)	0.4461	2.569	3.213
Specific Volume of Vapor at 5°F (cu. ft./lb.)	12.27	1.485	1.246
Latent Heat of Vaporization at 5°F (B.t.u./lb.)	84.0	69.5	93.5
Net Refrigeration Effect of Liquid 86°F/5°F (B.t.u./lb.)	67.5	51.1	69.3
Specific Heat of Liquid at 86°F (B.t.u./lb. °F)	0.209	0.243	0.335
Specific Heat of Vapor at Constant Pressure of 1 atm. and 86°F (B.t.u./lb. °F)	0.13	0.14	0.15
Specific Heat Ratio at 86°F at 1 atm. (k = Cp/Cv)	1.14	1.14	1.18
*Coefficient of Performance	5.00	4.69	4.65
*Horsepower/Ton Refrigeration	0.943	1.005	1.016
*Refrigerant Circulated/Ton Refrig. (lbs./min.)	2.96	3.91	2.89
*Liquid Circulated/Ton Refrig. (cu.in./min.)	56.0	83.8	68.1
*Compressor Displacement/Ton Refrig. (c.f.m.)	36.3	5.81	3.60
Thermal Conductivity of Liquid at 86°F (B.t.u./hr./sq.ft./°F/ft.)	0.0609	0.0492	0.0595
Thermal Conductivity of Liquid at 32°F (B.t.u./hr./sq.ft./°F/ft.)	0.0680	0.0559	0.0704
Thermal Conductivity of Vapor at 86°F (B.t.u./hr./sq.ft./°F/ft.)	0.0048	0.0056	0.0068
Thermal Conductivity of Vapor at 32°F (B.t.u./hr./sq.ft./°F/ft.)	0.0045	0.0048	0.0060
Toxicity (Underwriters' Laboratories Group No.)	5	6	5A
Flammability & Explosivity	none	none	none
Relative Dielectric Strength of Vapor (compared with Ethyl Chloride as Unity)	3.00	2.40	1.31
Odor	Ethereal	Ethereal	Ethereal
Type of Compressor in Which Usually Used	Rotary & Centrifugal	Reciprocating & Rotary	Reciprocating
Evaporator Temperature Range	30 to 50°F	0 to 50°F	−130°F to 0°F
Solubility of Water in Liquid Refrigerant at 32°F (gm./100 gm. Refrigerant)	0.0036	0.0026	0.060
Solubility of Water in Liquid Refrigerant at 86°F (gm./100 gm. Refrigerant)	0.013	0.012	0.15
Oil Solubility (Miscibility with Lubricating Oils)	yes	yes	yes**

*Based on 5°F Evaporator Temperature and 86°F Condenser Temperature.
**Separates into two phases at lower temperatures.

FREE! VALUABLE NEW FOLDERS! Write today for important new informative folders, "Genetron" Super-Dry Refrigerants for Air Conditioning and "Genetron" Super-Dry Refrigerants for Refrigeration.

GENERAL CHEMICAL DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 Rector Street, New York 6, N. Y.

Basic Chemicals for American Industry

Inquiry Code Number for this advertisement—83

ORGANIC CHEMICALS, continued

Cycloserine

Antibiotic. (84A)

. . . Cycloserine is exceptionally potent against advanced TB and infections of the genito-urinary tract. Unlike other successful antibiotics, it's much more active in the human body than in the test tube.—*Commercial Solvents Corp., New York 16, N. Y. and Eli Lilly and Co., Indianapolis, Ind.*

Dibromodimethyl Hydantoin

Brominating agent. (84B)

. . . Dibromodimethyl hydantoin is an organic brominating agent which is less hazardous and more useful in many cases than bromine and other brominating agents.—*Glyco Products Co., Inc., New York 1, N. Y.*

Diethylstilbestrol

Animal nutrient. (84C)

. . . Diethylstilbestrol (synthetic hormone) in an FDA-approved premix form, Stilbosol, boosts average daily gain of fattening cattle by 19%, cuts feed costs by 11%.—*Eli Lilly and Co., Indianapolis 6, Ind.*

Diisocyanates

Can be used at higher temperatures. (84D)

. . . Like other isocyanates, bitolylene diisocyanate (TODI) and dianisidine diisocynate (DADI) react with polyesters to yield rigid, flexible foam, but have added advantages: (1) low order of volatility—minimizing hazards from vapor exposure and permitting use at higher temperatures, (2) substituent group next to each isocyanate group—allowing greater latitude in time-temperature relationships in diisocyanate reactions, (3) rigid spatial configuration (symmetrical system of two freely rotating benzene rings)—imparting more strength to resins.—*The Carwin Co., North Haven, Conn.*

Dimer, Acrolein

Available—along with derivatives—in quantity. (84E)

. . . Acrolein dimer and three of its derivatives are available in quantity. The dimer is starting material for preparation of synthetic resins and the synthesis of chemicals for textile finishing, paper treating, rubber compounding, etc. Derivatives: alpha-hydroxyadipaldehyde is an insolubilizing agent for protein and polyhydroxy materials and a cross-linking agent for polyvinyl acetal and polyvinyl acetate; hexanetriol-1,2,6 is an alkyd and polyester resin intermediate, a softener and solvent; tetrahydropyran-2-methanol is used in the preparation of plasticizers and pharmaceuticals.—*Carbide and Carbon Chemicals Co., New York 17, N. Y.*

Dimethyl Sulfoxide

New solvent on threshold of commercial production. (84F)

. . . Producer of dimethyl sulfoxide, new solvent, is eyeing three big markets for its product—acrylics, antifreeze and acetylene. Though DMSO will have to buck three well established chemicals—dimethyl formamide (DMF), ethylene glycol and acetone—in the above fields, here's why it may have a chance. Acrylics—DMSO dissolves Orlon as effectively as does DMF yet costs less. Antifreeze—water-soluble DMSO gives lower freezing point temperature in aqueous mixtures than equivalent amounts of ethylene glycol, specific heat is higher than glycol and other organics. Acetylene—DMSO dissolves 33% more acetylene than does acetone. Price of DMSO is 25¢ a lb. compared with 33¢ for DMF, 15¢ for ethylene glycol and 8-10¢ for acetone. But its power as a solvent may win enough of a market at 25¢ a lb. to bring its price down to the 10-15¢ range.—*Stepan Chemical Co., Chicago 6, Ill.*

Fermentation Chemicals

Four more available. (84G)

. . . Here are four more fermentation chemicals—two citric acid ester plasticizers and two itaconic acid esters. Acetyl tributyl citrate (Citroflex A-4) and acetyl tri-2-ethylhexyl citrate (Citroflex A-8) are odor-free, high boiling plasticizers available in volume. A-4 has low toxicity, is soluble in most organic solvents. It can be used in heat and light-stable polyvinyl chloride films, cellulose-based lacquers, formulations with both polyvinyl acetate and acetals, polyvinylidene chloride. Price: 33¢ a lb. A-8, with low volatility and good low-temperature flexibility, is specialty plasticizer for producers of PVC, polyvinylidene chloride polymers and copolymers. Dimethyl and dibutyl itaconate are available in pilot plant quantities. Both esters copolymerize readily with acrylonitrile, methacrylate vinyl chloride, styrene and butadiene; used to make complex compounds.—*Chas. Pfizer & Co., Inc., Brooklyn 6, N. Y.*

Glycerine Carbonate

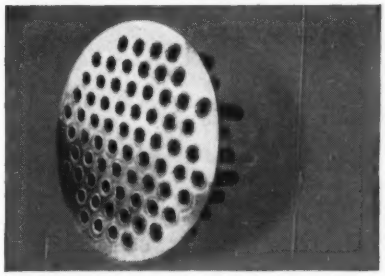
Good source of reactive epoxide, glycidol. (84H)

. . . Glycerine carbonate, commercial cyclic glycerine derivative, is a colorless, odorless liquid, miscible with water and low molecular weight solvents. Possible applications: source of reactive epoxide, glycidol; extractive solvent; in reactions with NH_3 or strong primary and secondary amines; in hydroxyalkylation reactions.—*Jefferson Chemical Co., New York 16, N. Y.*

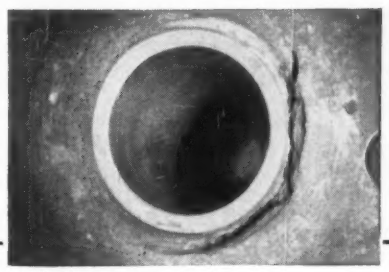
TITANIUM

SOLVES TOUGH CORROSION PROBLEMS

HOT NITRIC ACID at pressures of 300 psi took a high toll of stainless-steel condenser tubes at a Du Pont plant—until this titanium "top-hat" was installed. Fabricated entirely of titanium, it provides a protective sleeve inside the top 3 inches of the condenser tubes. The unretouched photo shows the clean, uncorroded appearance of the "top-hat" after 14 months' continuous service. The titanium tube sheet, tubes and welds have essentially the same appearance as when installed . . . show evidence of being able to serve indefinitely.



HIGH-VELOCITY STEAM and biting hydrochloric acid were cutting the service life of cast-iron steam diffusers to less than 3 months at a Du Pont Pigments plant. Bronze and corrosion-resistant alloys were tried, without improvement. Then a diffuser fabricated from titanium was installed. This proved to be the answer. The photo shows the condition of the titanium diffuser after 2 years' service—a period ten times the average life of other diffusers. Compare the uncorroded appearance of the titanium diffuser with the cast-iron flange, which shows severe acid attack.



A partial list of other environments where TITANIUM offers unmatched corrosion resistance . . .

CORROSIVE CHEMICALS	CONDITIONS	POSSIBLE APPLICATIONS
Ferric Chloride	0-30% at 100° C.	Process piping
Sodium Chloride	All Conc. at 100° C.	Kettles, heat exchangers
Chlorine-Saturated Water	Room Temperature	Proportioning equipment
Wet Chlorine Gas	75° C.	Recovery equipment, electrolytic cells
Chromic Acid	10% and boiling	Plating equipment
Sulphuric-Nitric Acid Mixture	40% sulphuric, 60% nitric at 35° C.	Acid heaters, nitrators, auxiliaries
Calcium Hypochlorite	6%-35° C.	Filter presses, processing equipment
Zinc Chloride	20%-100° C.	Coils, pans, evaporators

TITANIUM MAY BE THE ANSWER TO YOUR CORROSION PROBLEM

If you're looking for a way to improve your product . . . or cut production and maintenance costs by extending the service life of essential equipment . . . it may pay you to investigate titanium. As a pioneer *supplier* of titanium sponge, Du Pont has the experience to offer you expert technical help with your evaluation tests . . . can put you in touch with manufacturers best equipped to work with you on your particular product or application. Considerable fabricating know-how and a wide variety of mill shapes are available now to help you use titanium to solve your corrosion problems. For more detailed information on titanium, just check the coupon below, or write: E. I. du Pont de Nemours & Co. (Inc.), Pigments Department, Wilmington 98, Delaware.

TITANIUM SPONGE

PIONEERED COMMERCIALLY BY DU PONT

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BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

E. I. du Pont de Nemours & Co. (Inc.)
Pigments Department CE-10
Wilmington 98, Delaware

☐ Please send me your new technical bulletin on the corrosion-resistant properties of titanium.

☐ Please send me your general booklet on titanium.

I am interested in using titanium for:_____

_____

*Name*_____

*Firm*_____ *Position*_____

*Address*_____

*City*_____ *State*_____

ORGANIC CHEMICALS, continued

Glycol, Polyethylene

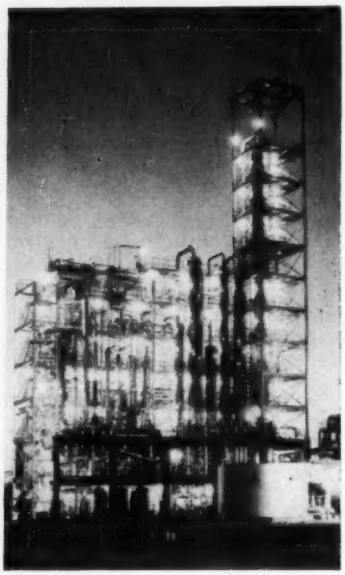
Has molecular weight of 15,000-20,000. (86A)

. . . Carbowax 20M is a water-soluble, white, polyethylene glycol. Its melt viscosity and aqueous solution viscosity (twice that of equivalent gum arabic solutions) are higher than those of Carbowax 6000, heaviest polymer previously available. Films of 20M are stronger and harder than those of other solid polyethylene glycols. Molecular weight of 20M is 15,000-20,000.—*Carbide and Carbon Chemicals Co., New York, 17, N. Y.*

Isobutyraldehyde

Source of multipurpose chemicals. (86B)

. . . Markets are broadening for isobutyraldehyde, a single abundant source for many multipurpose chemicals. Texas Eastern is pushing its two top volume isobutyraldehyde derivatives, isobutyl alcohol and isobutyl acetate, as supplements or replacements for the normal butyl in many applications because isobutyls (1) cost less, (2) have milder odor (especially the acetate), (3) have lower specific gravity. Eastman's latest crop of derivatives include neopentyl glycol, isobutyric acid, isobutyl isobutyrate and 2,2,4-trimethyl-1,3 pentanediol, The first three are available in semi-commercial quantities. Neopentyl glycol, priced at 45¢ a lb., is a basic raw material for unsaturated polyester resins, mixed polyurethanes for fabric impregnation. With phthalic and maleic anhydrides it forms moldable alkyd resins compatible with cellulose acetate, with certain mono- and dibasic acids it combines to yield low viscosity plasticizers for vinyl films. Isobutyric acid, at 33¢ a lb., is a precursor for a potassium salt which is a solubility promoter in caustic extraction of mercaptans and is also used to make esters which are promising plasticizers. Isobutyl isobutyrate, because of its fruity odor and flavor, is used in perfume and flavoring formulation. 2,2,4-trimethyl-1,3 pentanediol reacts with dicarboxylic acids to give esters suitable for hydraulic fluids and lubricant additives in the high boiling field. Combined



with maleic and phthalic anhydrides it yields moldable alkyd resins completely compatible with cellulose esters. Isobutyraldehyde itself is used in resins, corrosion inhibitors, gasoline additives, plasticizers, textile assistants and vinyl monomers. It is made via the Oxo reaction for production of aldehydes and alcohols.—*Eastman Chemical Products, Inc., Kingsport, Tenn.*

Isooctyl Alcohol

From Oxo process. (86C)

. . . Standard Oil of Indiana is the third company to produce isooctyl alcohol via the Oxo process. (Others are Esso Standard, Baton Rouge, La., and Gulf Oil, Port Arthur, Tex.) Output of Standard of Indiana's Wood River, Ind., plant will be channeled into various uses including production of decyl and other high boiling alcohols. Primary outlet for isooctyl alcohol is the manufacture of vinyl plasticizers by conversion of the alcohol to desired esters, e.g. phthalate, adipate, sebacate, azelate. In lubricant field, sebacate, azelate, adipate, pelargonate and phosphate esters perform as heat-stable, noncorrosive synthetic lubricating oils, hydraulic oils and greases for jet engines. Isooctyl alcohol offers promise as basis for wetting agents and nonionics in surfactant field.—*Standard Oil of Indiana, Whiting, Ind., Esso Standard Oil Co., New York 19, N. Y., Gulf Oil Corp., Pittsburgh 30, Pa.*

Isosebacic Acid

Beats sebacic acid price-wise; adipic acid, quality-wise. (86D)

. . . Mixture of sebacic acid isomers, U.S.I. Isosebacic Acid, has properties to ease government concern over possible short supplies of sebacic acid in wartime. Priced at 45¢ a lb., Isosebacic Acid is more than competitive with sebacic (64¢ a lb.) and within striking distance of adipic (37-38¢ a lb.). It's a god bet for many jobs calling for a C_9-C_{12} dibasic acid: basis for synthetic jet lubricants, production of certain vinyl resin plasticizers, production of polyamides; synthesis of polyurethane resins. U.S.I. Isosebacic Acid is mixture of ethyl suberic acid, a, a' diethyl adipic acid and sebacic acid.—*U.S. Industrial Chemicals Co., New York 16, N. Y.*

SPECIAL PROFIT AND SUPPLY ADVANTAGES FOR CHEMICAL PROCESSORS

Michigan Chemical Corporation has twenty years' experience in the research and production of Bromine, Magnesia, Chloride, and Calcium chemicals. This background provides users with a dependable source of quality chemicals made right and priced right; our plants are large enough to provide quantity shipments for practically all purposes. Insure continuity of your operations: order from Michigan Chemical.

On requirements for special products (i.e., intermediates) consider us. We can move fast, efficiently, and price-competitively on your needs.

Aluminum Bromide Anhydrous. Technical grade, dark colored product suitable for most manufacturing uses. Highly reactive catalyst, many uses in organic synthesis especially in isomerization, bromination and halogen exchange reactions. Available as solid or lump.

Ammonium Bromide NF IX. A white powder, very pure, complies with all the requirements of the National Formulary. Commonly used as sedative in pharmaceutical preparations. Also in photography, textile finishing and as fire retardant for fabrics.

Bromine, Dry. A powerful oxidizing and brominating agent used in manufacture of dyes, pharmaceuticals. Many applications in organic synthesis. Low moisture content of 30 ppm permits use in nickel and monel equipment. Very irritating to skin, eyes.

Bromodichloromethane. A clear, heavy, volatile liquid with a chloroform-like odor. Specific gravity 1.99; boiling point 90 degrees C. Soluble or miscible with many organic liquids. Used in organic synthesis. Adds to olefins under the influence of peroxide catalysts.

Bromotrichloromethane. A clear, colorless, heavy liquid with a chloroform-like odor. Specific gravity 2.0; boiling point 104 degrees C. Miscible with many organic liquids. Useful in organic synthesis, forming adducts with olefins with peroxide catalysts.

Chlorobromomethane "CB". A specially prepared pure, non-corrosive fire extinguishing fluid. Now finding increased use in factories, warehouses, homes. Clear, colorless, 2 degrees C. boiling range; complies with current military specifications. Used as solvent and in organic synthesis.

Cyclopentyl Bromide. A clear, colorless liquid with an aromatic odor. Specially prepared for use in organic synthesis, particularly for introduction of the cyclopentyl radical. Many potential uses in manufacture of pharmaceuticals. Purified grade, 2 degrees C. boiling range.

Dibromochloromethane. A clear, colorless, heavy liquid similar to bromodichloromethane. Used in organic synthesis, forming adducts with olefins under the influence of peroxide catalysts. Specific gravity 2.38; boiling point 116 degrees C.

β - Diethylaminoethyl Chloride Hydrochloride. $(CH_3CH_2)_2NCH_2CH_2Cl \cdot HCl$ (DEC). A granular solid. Specially suited for use as an intermediate in organic chemical manufacture, including antispasmodic agents and other pharmaceuticals.

β - Dimethylaminoethyl Chloride Hydrochloride. (DMC) $(CH_3)_2NCH_2CH_2Cl \cdot HCl$. A granular solid. Specially prepared for use in manufacture of antihistaminics and other pharmaceuticals. Other potential uses in organic synthesis. Relatively non-toxic in hydrochloride form.

β - Dimethylaminoisopropyl Chloride Hydrochloride. $(CH_3)_2NCH_2CHClCH_3 \cdot HCl$ (DMIC). An organic intermediate similar in appearance and properties to DEC and DMC. Specially prepared for manufacture of analgesics and other pharmaceuticals. Other potential uses in organic synthesis.

γ - Dimethylaminopropyl Chloride Hydrochloride. $(CH_3)_2NCH_2CH_2CH_2Cl \cdot HCl$ (DMPC). A white powder of singular purity. A versatile intermediate for pharmaceutical and organic syntheses, available exclusively from Michigan Chemical.

Ethyl Bromide. A clear, colorless, volatile liquid, specially prepared for use as an intermediate in organic synthesis. Practically free from impurities; has a narrow boiling range. Used in manufacture of dyes, perfumes and pharmaceuticals.

Hydrobromic Acid. A clear, colorless or light amber colored fuming liquid. Used for manufacture of inorganic metal bromides, aliphatic bromides, pharmaceuticals, dyes and intermediates. 48% acid and other strengths.

Magnesium Carbonate, Basic, Technical. Fine, uniform white powder, 325 mesh, bulk density 5.5 pounds per cubic foot. Very reactive. Used for rubber compounding, printing inks, paints, varnishes. Anti-caking agent for table salt; conditioning or bulking material for powder formulations.

Magnesium Hydroxide. Fine, white powder, typical assay 96.3%, low in moisture, iron, alumina, silica. Technical and NF IX grades. Special bulk densities available in NF grade. Convenient material for manufacture of light magnesias, other magnesium compounds.

Magnesium Oxides. Six principal grades of Michigan magnesium oxide with wide range of desirable physical and chemical characteristics covering principal uses of MgO, including rubber compounding, rayon manufacture, ceramics, glass, refractories, insulation.

Methyl Bromide. A heavy, colorless liquid, vaporizing at 40 degrees F., non-flammable and poisonous. Highly penetrating and insecticidally effective fumigant. Also used in organic synthesis for the introduction of the methyl group, especially in preparation of certain pharmaceutical chemicals.

Methylene Bromide. A clear, colorless liquid. Miscible with methyl alcohol, ether, chloroform and other organic liquids. A purified product with a 1.8 degrees C. boiling range. Specific gravity 2.47. Used in organic synthesis, as solvent and heavy gauge liquid.

Monobromobenzene. Clear, colorless, heavy liquid. Specially prepared for use as an intermediate in preparation of organic compounds. For introduction of the phenyl radical and in Grignard-type reactions. A pure material with a 4 degrees C. boiling range, specific gravity 1.495.

Phosphorous Tribromide. Brominating agent. A liquid, boiling point 173 degrees C., which fumes in contact with moist air. Used in synthetic work to convert alcohols to bromides, and acids to acyl bromides. Specially useful in preparation of bromides from alcohols without rearrangement.

Potassium Bromate, Granular. A fine, white, granular or crystalline material 99.5% pure. Decomposes at 370 degrees C. with evolution of oxygen. Strong oxidizing agent, used as an analytical reagent. Neutralizer in permanent wave compounds.

Potassium Bromate, Powder. A fine uniform powder with same properties as Granular. Available with added magnesium carbonate conditioning agent when specified. Suitable for use as an aging additive for flour.

Potassium Bromide, U.S.P. XIV. Pure, white granular powder. Low in chloride, passes all U.S.P. requirements. Widely used in the preparation of photographic emulsions, and in lithography. One of the most important sedatives. Available in several granulations.

Sodium Bromide, U.S.P. XIV. Pure, white crystalline powder or granules. Passes all requirements of the U.S. Pharmacopoeia. High assay; low in chloride. An important nerve sedative. Used in manufacture of other bromides. Contains about 77.5% bromine.

Trimethylene Chlorobromide. Clear, colorless liquid used in manufacture of anesthetic grade cyclopropane. Greater reactivity of bromine atom makes trimethylene chlorobromide specially useful also in preparation of gamma chloro compounds. Boiling range 2 degrees C. maximum.

Zinc Bromide Solution, Optical Grade. Clear, colorless solution, about 80% $ZnBr_2$. Used in laboratories dealing with radioactive chemicals as a radiation viewing shield; the most satisfactory material. Meets all chemical and optical specifications of Argonne National Laboratory.

Also manufacturer of Pestmaster Insecticides, Pestmaster* Methyl Bromide Fumigant and Dustmaster* Road Chemicals.*

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ORGANIC CHEMICALS, continued

Lysergic Acid

Synthesized. (88A)

. . . Synthesis of lysergic acid, basic compound in ergot alkaloid structures, may presage large-scale manufacture of chemicals—now quite rare—important to medicine.—*Eli Lilly and Co., Indianapolis 6, Ind.*

Lysine

Key amino acid, boosting protein value of food, is synthesized. (88B)

. . . Lysine, one of the critical eight amino acids essential to human nutrition, has been successfully synthesized and produced in limited quantities. This means that processors can get the "right combination" of essential amino acids in many foods with low available protein values by adding small quantities of the synthesized amino acid. 0.2% lysine added to wheat flour boosts protein in bread by 70-100%. Until manufacturing facilities are expanded, supplies to manufacturers, nutritionists, research groups will be limited.—*E. I. du Pont de Nemours & Co., Wilmington 98, Del.*

Maleic Anhydride

In tank car quantities. (88C)

. . . Maleic anhydride is shipped in quantities of 8,000 or 10,000 gal., at 1¢ a lb. less than regular price. Advantages of bulk handling of molten chemical: less storage space needed, no small container handling and disposal, more rapid charging, less heating.—*Monsanto Chemical Co., St. Louis 4, Mo.*

Nucleic Acid

Produced from yeast grown in sulfite liquor. (88D)

. . . Nucleic acid, essential to growth and proper function of living cells, is recovered from Torula yeast which is cultivated in spent sulfite liquor. Schwarz Labs and Rhinelander Paper Co. (Wis.) are responsible for the development work. Compounds derived from or related to the acid include: Adenosine (extends storage life of whole blood), Adenosine triphosphate (heart stimulant), Adenosine-5-phosphoric acid (dilates blood vessels).—*Schwarz Laboratories, Inc., Mount Vernon, N. Y.*

Nutrition Factor

Fermentation product. (88E)

. . . Vigo Factor, an unidentified nutrition factor, increases growth of swine and poultry beyond levels obtained with antibiotics and other growth stimulants. Product sparks weight gains of 15-20% over those recorded for base rations.—*Chas. Pfizer & Co., Inc., Brooklyn 6, N. Y.*

Odor Masking Agents

For fuel oils. (88F)

. . . Two odor masking agents, Alamask 0.19 and Alamask 0.20, improve odor of No. 1 and No. 2 fuel oils. Recommended concentrations: 0.006% (No. 1), and 0.0085% (No. 2).—*Rhodia Inc., New York 17, N. Y.*

m-Phenols

Have lighter color. (88G)

. . . m-Phenols 220—less than 2 Gardner initially and only 3 Gardner after accelerated aging—are available through special processing which removes nearly all nitrogen bases. Improved color should interest manufacturers of resins for casting and surface coating, mercerizing penetrants, paint driers, etc.—*Carbide and Carbon Chemicals Co., New York 17, N. Y.*

Piperazines and Pyrazines

Carbon-substituted. (88H)

. . . Now in commercial production are several cyclic amines—2-methyl- and 2,5-dimethyl piperazine; 2-methyl and 2,5-dimethyl pyrazine. These compounds have nitrogen atoms in the para position of the ring as well as in the methyl side chains. Existing and potential uses: polymers, pharmaceuticals, fungicides.—*Wyandotte Chemical Corp., Wyandotte, Mich.*

Sorbic Acid

Controls mold growth in food. (88I)

. . . Sublicenses under a Best Foods, Inc. patent will be granted by Carbide and Carbon to its sorbic acid customers. Commercial follow-through on some of the promising applications (e.g. mold control) uncovered in experimental work awaits only FDA approval. Sorbic's price—$2.45—is tempered by the fact that only small amounts are needed for effective control.—*Carbide and Carbon Chemicals Co., New York 17, N. Y.*

Terpene Chemical

Available in commercial quantities. (88J)

. . . Allo-Ocimene, polymerizing readily and containing three conjugated double bonds, is available for use as a chemical intermediate in unsaturated systems. Allo-Ocimene-85 is highly refined grade containing 80% Allo-Ocimene.—*Naval Stores Div., The Glidden Co., Jacksonville, Fla.*

p-Tert-Butylbenzoic

Chemical intermediate, commercially available. (89A)

. . . Made commercialy by blowing air through hot liquid p-tert-butyltoluene in the presence of a metallic catalyst, p-tert-butylbenzoic acid should find wider uses. Present uses: upgrades vegetable oils, gives better paint vehicles. Potential: in PVC plasticizers, insecticides, waxes, corrosion inhibitors, greases, paints.—*Shell Chemical Corp., New York, N. Y.*

Vanillin, Crude

Chemical intermediate in tonnage quantities. (89B)

. . . Lioxin, 97% vanillin compound made from sulfite lignin, is economical substitute for pure vanillin in applications such as: (1) brightener in zinc plating bath, (2) syntans for tanning, (3) vulcanization inhibitor (reacted with ammonium polysulfide), (4) antifoaming agent in lube oils, (5) accelerating linseed oil oxidation.—*Ontario Paper Co., Ltd., Thorold, Ontario.*

• Protective Coatings

Borate, Fire-Retardant

For latex paints. (89C)

. . . FR-28, fire-retardant borate additive, is ticketed for latex paints used for fibrous wall board and like surfaces. It provides, in addition to the safety factor, improved paint washability and corrects the problem of borate recrystallization in paint films.—*Pacific Coast Borax Co., New York 17, N. Y.*

Ceramics in Solution

Nonbrittle, self-bonding coatings. (89D)

. . . A new process technique, "solution ceramics," gives adherent, non-brittle inorganic coatings on almost any heated, clean solid surface at 400-700 F. Coatings can be modified, are self-bonding and corrosion resistant. Thicknesses can be controlled.—*Armour Research Foundation, Chicago, Ill.*

Dielectric Coating

Silicone rubber. (89E)

. . . Fully cured coatings of Silastic S-2007 have twice the thermal conductivity of conventional resinous or rubber dielectrics. Protective jackets (formed without pressure or graduated curing) are both heat-stable and oxidation-resistant.—*Dow Corning Corp., Midland, Mich.*

Drying Oil from Petroleum

Replaces agricultural oils in paints. (89F)

. . . Heavy-bodied, sticky, almost colorless C-oil can be used for better surface coatings such as: enamels and varnishes, masonry paints for floors, primers. Surface coatings based on C-Oil resist scratching and stand up well to alkalis, dilute acids and water. Use of the oil as a base for industrial coatings should lend impetus to the trend away from natural paint raw materials by easing paint makers' dependence on linseed, soya, tung and other agricultural oils which vary in price and supply. Developer of C-Oil coatings anticipates better quality control than is possible with present oils.—*Standard Oil Development Co., New York 19, N. Y.*

About New Chemicals & Materials . . .

This inventory of new chemicals and materials lists only new or newsworthy products selected by CE editors for publication in August 1954—July 1955 issues. The 201 items in this inventory have, therefore, been carefully screened for their interest to chemical engineers in industry; for this reason, this section lists very few research chemicals, specialty chemicals, analytical reagents or consumer products. Most products—except organic chemicals—are listed by their major end uses.

PROTECTIVE COATINGS, continued

Enamel, Pipeline

Protects against high temperatures. (90A)

. . . Pitt Chem Hotline Enamel, a tar base coating, protects pipelines under high temperature conditions (180 F. on pressure side of gas pumping stations) without sagging, flow-off, pipe exposure. Enamel is resistant to soil and pressure stresses, penetration by stones, to high ground temperatures anywhere.—*Pittsburgh Coke & Chemicals Co., Pittsburgh, Pa.*

Lacquers

Protects aluminum against fresh mortar. (90B)

. . . Half-second butyrate, a cellulose polymer, is base for lacquers protecting structural aluminum surfaces against fresh mortar. Lacquers' weather resistance is better than other clear, film-forming material incorparable in easily sprayable lacquer.—*Eastman Chemical Products, Inc., Kingsport, Tenn.*

Paint, Aluminum-Silicone

Withstands high heat service on stacks. (90C)

. . . After 2½ years of high heat service—950–1,100 F.—diesel exhaust stacks coated with aluminum-silicone paint look as good as new. Paint was applied as follows: first a gray primer was laid on and burned in by a 24-hr. run of diesels; engines quiet once more, a top coating followed, composed of a silicone resin combined with aluminum pigment; again engines brought stacks up to full temperature.—*Reynolds Metals Co., Louisville, Ky.*

Paint, Rubber Masonry

Now expanding into home-building field. (90D)

. . . Styrene-butadiene copolymers, having achieved a success of their own in industrial masonry paints, are now expanding into residential dwelling field—especially in asbestos-cement shingle construction. 1954 estimated market was nearly 7 million gal. And with wood construction (on which SBC paints are of little value) falling off in recent years, prospects look even rosier. Most distinctive virtues of SBC paints are: resistance to alkali present in fresh masonry surfaces; resistance to water, yet can be formulated to permit slow rate of moisture vapor transmission vital to porous masonry coatings; resistance to acids and alkalis, sunlight, soap, detergents, animal, vegetable and mineral oils; formation of hardy films on masonry that very rarely check, peel, pit, flake or crack. Uses other than in finishes for concrete, stucco, hot plaster, etc., include metal primers, plaster sealer primers, silk screen inks, etc. Goodyear makes a rubber resin, Pliolite S-5, a masonry solvent paint vehicle. Ratio of styrene to butadiene in SBC is different from that in synthetic rubber, i.e. 85 to 15 instead of 1 to 3. Altering monomer balance to this extent obtains both film-forming and handling characterisitics required of a paint resin yet preserves rubber's chemical inertness. Anticipated 1960 market (for homes): 10 million gal.—*Goodyear Tire and Rubber Co., Akron 6, O.*

Paint, Rubber Masonry

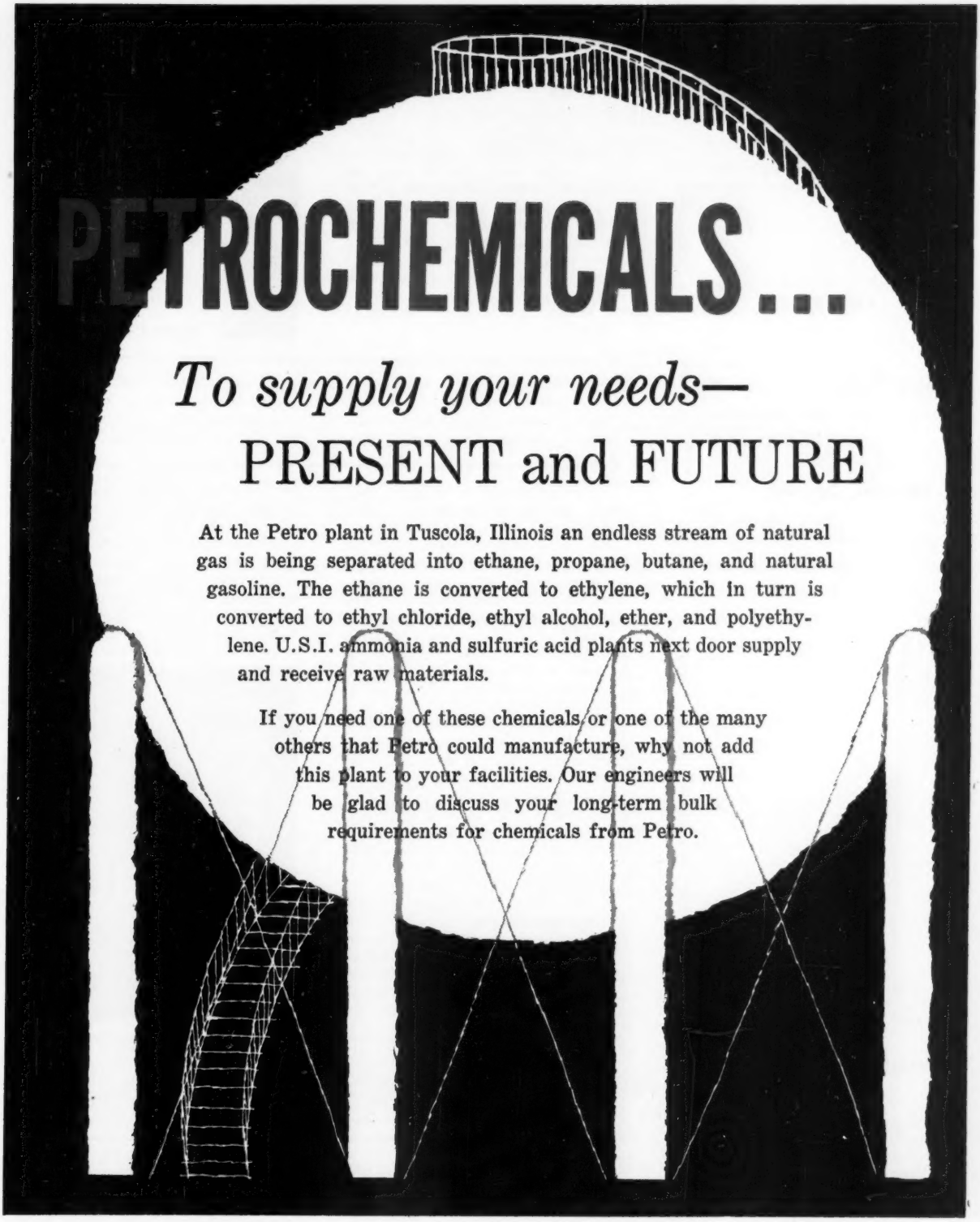
Inert to high alkalinity in masonry. (90E)

. . . Pliotone masonry coating is highly water resistant yet doesn't prevent masonry surfaces from breathing. Based on styrene-butadiene copolymers or synthetic rubber resin, Pliotone works well on stucco, asbestos shingle, brick, etc.—*Preco Chemical Corp., New Hyde Park, N. Y.*

Paints, Water-Thinned

Now contain acrylic and PVAc emulsions. (90F)

. . . Despite current success of rubber-based paint, manufacturers and consumers recognize that certain of its properties could stand improvement. These are, from the manufacturer's standpoint, necessity of avoiding hard water which might interfere by breaking the colloid; inability to use calcium sulfate pigments; demanding and rigorous manufacturing techniques required. From consumer's viewpoint, latex's inherent disadvantages are yellowing and embrittlement of paint film with age; poor freeze thaw stability; inadequate initial washability; poor water resistance. Both acrylic and PVAc emulsion paints minimize or correct many of these drawbacks without sacrificing all the desirable features of styrene/butadiane water-thinned paints. Both are considered fast drying paints, PVAc paints are a trifle slower than acrylics. Washability: washability and stain resistance for PVAc paints is good once they've thoroughly dried (usually over night). Water sensitivity: PVAc films are inherently water-sensitive and under certain conditions are susceptible to water spotting. Acrylics have excellent water resistance and won't exhibit film softening on exposure to air. Application: both products have a mild "non-painty" odor which rapidly dissipates on drying, are easily applied and have good adhesion. PVAc films won't form properly at temperatures below 50 F., while acrylic films can be applied in almost any kind of weather. Although acrylics are claimed to give the best over-all performance of any emulsion resin, require less tinkering by the formulator, they cost as much as 8¢ a lb. more than rubber latex PVAc resins. Only expanded use and possibly fresh competition among present and potential acrylic suppliers can lower the prices.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PROTECTIVE COATINGS, continued

Pigments, Universal

Work with both latex and alkyd base paints. (92A)

. . . Fifty tubes of colorants plus alkyd and latex tinting bases (two—white and neutral—for each) furnish latex finishes, alkyd flats and enamels in 300 decorator colors. Dealer merely determines amounts and kinds of pigment needed for a particular shade (from color chip rack), squeezes specified tubes into base material and gets complete dispersion in a few minutes.—*Pittsburgh Plate Glass Co., Pittsburgh 22, Pa.*

Size, Paper

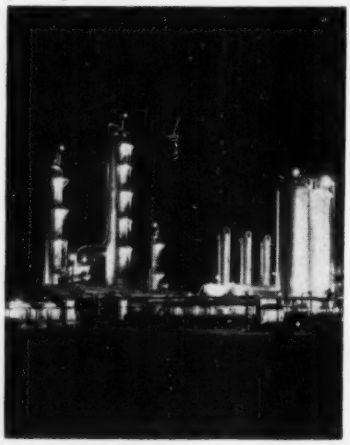
30% dollar savings over rosin size. (92B)

. . . Mersize RM Dry combines optimum fortification with highest efficiency in sizing papers. Sharp reductions possible in amount of size needed compared with rosin size. RM Dry may be added directly to beater in dry form or as water solution.—*Monsanto Chemical Co., St. Louis 4, Mo.*

Thinners, Odorless

Help stabilize markets for oil-based interior paints. (92C)

. . . In an attempt to recapture their hold on decorative interior market (threatened by latex emulsions), some members of the solvent paint industry are replacing conventional petroleum spirits with odorless grades. Success of this plan depends on: (1) production of truly odorless spirits, (2) availability of alkyd resins compatible with the new thinners, (3) winning adherents of conventional oil paint formulations to odorless products and recapturing the fancy of those who have switched to latex. Majority feeling is that the first point has been accomplished. Opinion is divided on the second and third points. Shell Oil alkyd reduction technique prescribes addition of small amounts of glyceryl mono-oleate or equivalent to render alkyds and odorless mineral spirits more compatible. Standard Oil of Calif. claims isophthalic acid gives resins that do the required compatibility job. Oil companies line up as The Haves (marketing odorless as well as conventional spirits) and Have-Nots (marketing only conventional and low odor spirits or none at all). Haves include Shell, Phillips, Socony-Vacuum, Sinclair, Standard of Calif., Richfield and Atlantic Refining. Unlike the Have-Nots, the Haves feel odorless thinners are here to stay and will find increasing acceptance in the interior market despite extra costs. And odorless spirits are making headway: estimates of annual sales run from 15–35 million gallons. Promotional publicity should push spirit sales even further.



Vinyl Coating

For machine tools. (92D)

. . . Vinyl-base coatings for exterior-stored machine tools provide longer-lasting protection than the old grease system. Coatings' resistance ranges from 55 to 160 hr. of salt spray.—*Ryan Aeronautical Co., San Diego, Calif.*

Vinyl Spray Coating

Makes buildings weatherproof. (92E)

. . . Plastispray, a vinyl sheeting compound, is used to encase buildings in a weatherproof, non-combustible, flexible plastic skin, 0.030–0.35-in. thick. Considerable savings in construction accrue from the use of this jointless plastic sheeting — rather than conventional brick or aluminum veneer material—to enclose the building. Flashing, parapet coping, facia and calking have been eliminated too.—*Liquid Plastics Corp., Long Island City, N. Y.*

Weatherproof Coating

For world's biggest Hortonsphere. (92F)

. . . In this huge Hortonsphere—225 ft. in diameter—near Schenectady, N. Y., a prototype atomic submarine will be tested. Sphere's steel surface is coated first with Insul-Mastic, a reinforced asphaltic coating, then with cellular glass insulation, finally with vapor and weather barrier of Insul-Mastic membraned with glass cloth.—*Insul-Mastic Corp. of America, Pittsburgh, Pa.*

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Ethylene Oxide:

A reactive chemical intermediate for the synthesis of acids, alcohols, alkylanolamines, cyanohydrins, esters, ethers, glycols and halohydrins.

Ethylene Glycol:

A clear, colorless, practically odorless, hygroscopic liquid used in the antifreeze, cellophane, chemical, explosives, electrical, fiber, paint, plastics, rubber and other industries.

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A clear, colorless, hygroscopic, non-corrosive liquid for use as a solvent, humectant and chemical intermediate.

Triethylene Glycol:

Low volatility and high boiling point make this especially useful as solvent and plasticizer, in air sterilization, resins, gas dehydration, heat transfer, explosives and fuels.

Ethanolamines:

Used in virtually every industry, easy to handle, reactive, this family of chemicals is used extensively in surface active agents, detergents and emulsions, and removal of acid gases, as well as the preparation of pharmaceuticals, cosmetics, and synthetic resins and plasticizers.

Formaldehyde:

The basic chemical for the manufacture of many plastics and resins as well as other important chemical products. Available as 37% Inhibited, 37% Low-Methanol and 45% Low-Methanol, 50% Low-Methanol.

Methanol:

Synthetic methyl alcohol of 99.85% purity. Used in the manufacture of formaldehyde, dyes, intermediates, and has a wide variety of industrial applications.

Sodium Nitrate:

A white crystalline salt of high purity containing a minimum of 99.5% $NaNO_3$. Supplied in three grades *at no extra cost*—coarse, medium and fine crystal sizes to meet exacting process requirements. Used in the manufacture of explosives, dyes, glass, ceramics, pharmaceuticals, metallurgy, metal treating and many other chemicals.

Urea:

A white, crystalline solid, Crystal Urea (Carbamide) is a high-purity product made to meet rigid specifications. It is used in an extremely wide range of products and processes.

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For Inquiry Code Numbers, see Master Index on Page 317

• Pulp and Paper Chemicals

Lignin

Valuable wood pulping byproduct is perpetual source of chemicals. (94A)

. . . In chemical wood pulping tremendous quantities of lignin are unavoidably produced as byproduct and are usually dumped into the nearest stream or burned for fuel. But three developments are causing the paper industry to regard lignin with new interest: stream pollution problems, insight into lignin's inner working, growing industrial emphasis on squeezing raw materials dry of dividends and throwing nothing away. Lignin now costs 6—8¢ a lb. Mass produced it could easily sell for less than a nickel. This price plus a potential supply of 10 million tons per yr. makes it attractive to the pulp and paper industry. Three roads for lignin utilization are: use of whole lignin, its salts and lignosulfonates as they are recovered from pulp liquors without further processing except purification; unit processing of lignin to produce useful derivatives; controlled, systematic breakdown of whole lignin into lower molecular weight organic materials. Lignin's industrial uses cover a wide variety of things including: rubber reinforcement, asphalt emulsion stabilization, ceramic binders and deflocculants, dry levelers and dispersants for dyeing of cotton and regenerated cellulosic textiles, oil drilling mud additives, protein precipitation, plastics extenders. Sodium lignate may be used in place of lignin where water solubility is an advantage. Lignosulfonates can be used in conversion to vanillin, as dispersing agents in concrete, pigment mixes, carbon black rubber masterbatches. Lignin degradations are known experimentally: oxidation yields benzene derivatives; hydrogenation gives cyclohexane derivatives; other reactions yield a variety of phenols, acids, alcohols, hydrocarbons. Many of these chemicals are obtainable from coal in which case lignin would be hard pressed as a competitive source. But some of them are much more unique. Most lignin degradations performed in structural studies have been pretty drastic, resulting in fragmentary products of relatively low molecular weights and based on a single benzene ring. The inevitable question: Can a carefully controlled, milder degradation split lignin into fairly large pieces and thus give rise to a new series of chemicals having intermediate molecular weight? No wonder paper men are giving lignin a close, hard look. This old "nuisance," which is so abundant and so cheap, may be their No. 2 asset.

Sizing Agent

Gives hard sizing, alkali resistance to paper. (94B)

. . . Aquapel reacts with cellulose paper fibers to form strong chemical bonds that yield hard, permanent sizing and resistance to water penetration. Size requires no alum, can be applied under acid or alkaline conditions. Properties of Aquapel-sized paper and some suggested end uses include hard sizing (dairy product containers and drinking cup stock), sizing at high pH (papers requiring permanence, noncorrosive papers, alkaline filled and coated papers), alkali resistance (soap wrap, reproduction paper, paper or board for use with silicate adhesives), improved strength (bag paper and boxboard).—*Hercules Powder Co., Wilmington 99, Del.*

Synthetic Fiber Paper

3-10 times stronger than paper from pulp or rags. (94C)

. . . Dacron, nylon and Orlon papers—made experimentally for the first time—have chemical resistance; high strength; resistance to molds, bacteria, light. Synthetic fiber papers are stronger, have 200 times greater resistance to folding than paper from pulp or rags. Manufacture is similar to conventional paper making. Manufacturer thinks new paper can be made commercially, is making experimental details available to the paper industry.—*E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del.*

Waste, Semichemical Pulp

Makes good road binder. (94D)

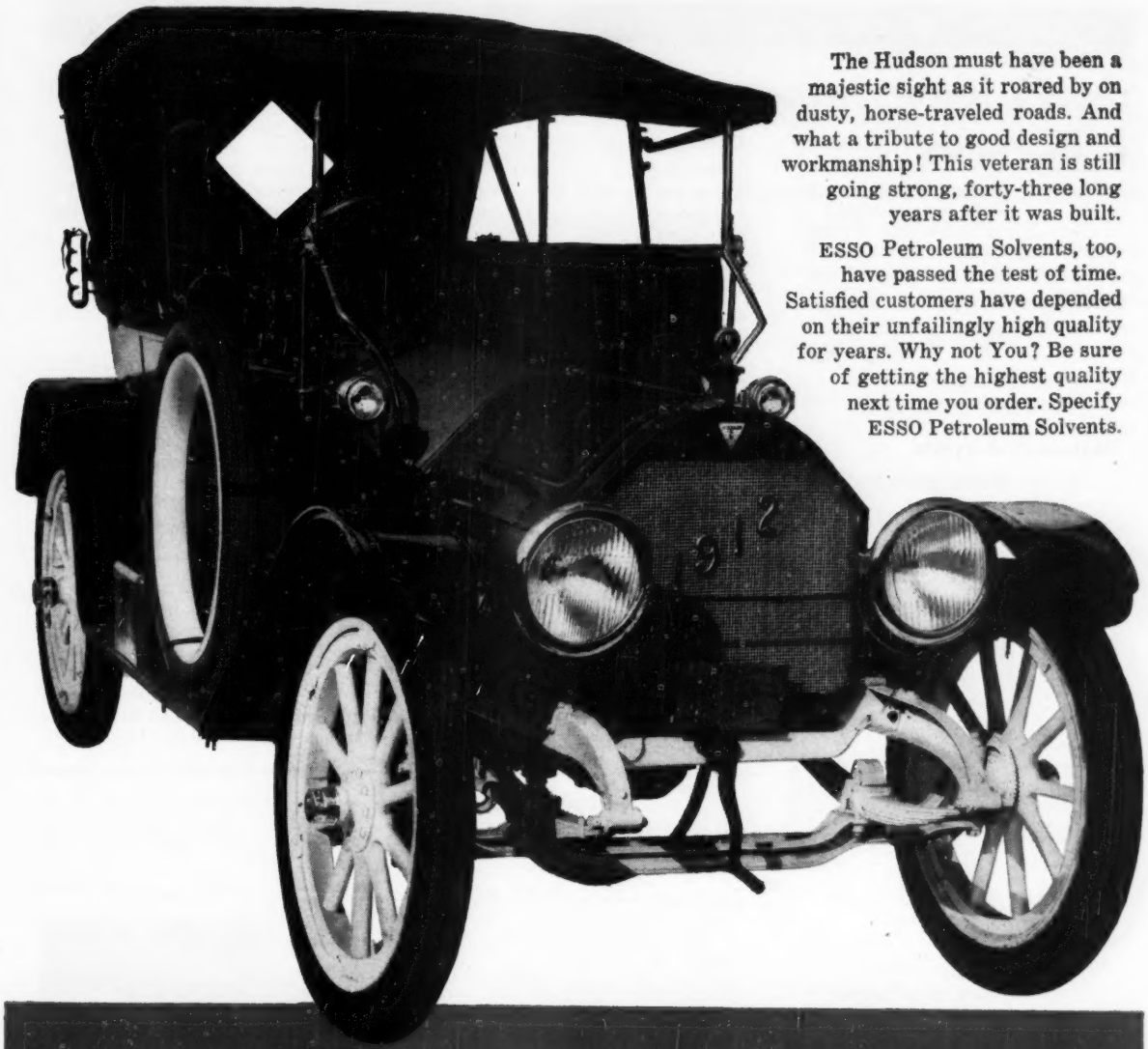
. . . Commercial outlet for semichemical pulp waste liquor is in road treatment. Advantage over other materials: waste is chemically neutral. It lays dust and binds road material together to form a more compact, stable roadbed. Binding action slows drift of loose material toward roadside, should lower future graveling costs.—*Otsego Falls Paper Mills, Otsego, Mich.*

• Resins and Plastics

Binder, Acrylic

For glass mats and molding preforms. (94E)

. . . Binder P-812 forms hard, tightly adhesive, colorless polymers that resist discoloration at usual drying and curing temperatures (450 F. for 5 min.). P-812 is insoluble in styrene and other organic solvents, is flow-resistant at high temperatures.—*Rohm and Haas Co., Philadelphia 5, Pa.*



The Hudson must have been a majestic sight as it roared by on dusty, horse-traveled roads. And what a tribute to good design and workmanship! This veteran is still going strong, forty-three long years after it was built.

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RESINS & PLASTICS, continued

Butyrates, Peelable

Plastic material protects metal parts in transit. (96A)

. . . Despite high initial cost, cellulose acetate butyrate envelopes—the kind that assume the shape of the product—are making a comeback as protection for metal parts in transit. Advantages outweighing cost: initially higher stability, positive fusion, transparency, easy stripping, reclaimability, simplicity.—*Eastman Chemical Products, Inc., Kingsport, Tenn.*

Coating, Vinyl

Sprays on, peels off. (96B)

. . . White Vincote, white-pigmented vinyl coating, reduces spray booth maintenance to minor operation. Sprayed on walls, coating dries quickly to tough, white film, permitting paint, lacquer, enamel overspray to be peeled off easily. Spreading properties cut down pinhole formation in film through which paint seeps and sticks to wall.—*Detrex Corp., Detroit 32, Mich.*

Elastomer, Acrylate

Resists petroleum. (96C)

. . . Vyram, an acrylate-type elastomer, resists both petroleum and ester-based hydraulic fluids and ozone. It's easily fabricated, using conventional equipment, into standard packing and gaskets. Other uses: hose liner, wire coating, impregnant for specialty fabrics requiring chemical resistance. Development quantities available.—*Monsanto Chemical Co., St. Louis 4, Mo.*

Film, Polyester

Outstanding mechanical, electrical properties; new uses. (96D)

. . . Increased demand for Mylar polyester film expected because of unusually good properties. Mylar is chemically inert to most greases and solvents. It has 2–3 times tensile strength of cellophane and acetate film; 2 times impact strength of known commercial film. Tear and flex strengths greater than cellulosics. Mylar retains all mechanical properties from —20 to 80 C. Dielectric strength is greater than nearly all other insulators. Possible uses: moisture proof, inert drum linings; industrial and electrical tapes.—*E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del.*

Film, Vinyl

Superior to others. (96E)

. . . Krene cast film is claimed to be thicker and stronger than any flexible, transparent vinyl film now produced commercially. It has high abrasion resistance, can be flexed and folded without cracking, comes in thicknesses from 0.005 to 0.010 in.—*Bakelite Co., New York 17, N. Y.*

Gum, Silicone

For silicone rubbers; uniform, stable polymer. (96F)

. . . Dow Corning 400 Gum, a dimethyl silicone polymer, can be processed to yield a variety of silicone rubbers. Heated blend of gum and certain organic peroxide vulcanizers converts mixture to cross-linked resilient mass. Inorganic additives determine physical properties of finished elastomer. Gum is clear, nontoxic and uniform, of high molecular weight and high viscosity. 400 Gum is stable in storage.—*Dow Corning Corp., Midland, Mich.*

Impregnation, Paper

Preserves 90% of paper's tensile strength after water soaking. (96G)

. . . Paper-impregnating technique produces paper retaining 90% of its tensile strength after water soaking and having more than ten times abrasion resistance of conventionally impregnated paper. Technique uses synthetic resins and elastomers. Can be applied to variety of paper thicknesses and modified to meet various conditions of strength, porosity, flexibility, chemical resistance.—*Dewey and Almy Chemical Co., Cambridge 40, Mass.*

Kel-F Elastomer

Will soon be on the market. (96H)

. . . Kel-F fluorocarbon is available in quantity as an elastomer. Items already fabricated from the elastomer include hose, tubing, diaphragms, gaskets, tank linings, corrosion-resistant paints, acid-resistant gloves, boots and protective clothing. Kel-F elastomer has high tensile strength, good extensibility, good tear strength.—*M. W. Kellogg Co., New York 7, N. Y.*

Laminate, Plastic

Withstands high temperature, pressure. (96I)

. . . Plastic laminate made with glass cloth and three different resins—maleic alkyd, triallyl cyanurate and a diallyl bicycloheptane dicarboxylate — withstands 30,200 psi. after being heated at 500 F. for eight days.—*Naugatuck Chemical Div., U. S. Rubber Co., Naugatuck, Conn.*

Laminate, Silicone

Has high heat resistance. (97A)

. . . Higher heat resistance than any laminate developed to date is the claim for Synthane grade G-7. G-7, combining heat-stable silicone resins with layers of woven glass fabric, withstands constant temperatures of 400 F. without sacrificing mechanical and electrical values.—*Synthane Corp., Oaks, Pa.*

Latices, Polymeric

Improve fabric's wearability. (97B)

. . . Polymeric latices, blended with synthetic resins in textile finishing, improve wearing qualities yet don't detract from fabric's wrinkle resistance and shrinkage control imparted by resins alone. Hycar 1561, a butadiene acrylonitrile latex, and Hycar 4501, a polyacrylic ester, are most effective modifiers to date.—*B. F. Goodrich Chemical Co., Cleveland, Ohio.*

Melamine

Glass-filled. (97C)

. . . Melmac 3135, glass-filled, electrical grade melamine molding material, has high heat distortion point (200 C. plus). Also has high dielectric strength, arc resistance, insulation resistance, low shrinkage and moisture absorption.—*American Cyanamid Co., New York 20, N. Y.*

Melamine Resin

Paper-based, polyester-modified. (97D)

. . . Phenolite Grade Y-2401, polyester-modified paper based melamine resin, combines good properties of paper-based phenolics and melamines. Has better arc, moisture resistance, and dielectric strength than phenolics, is easily machined.—*National Vulcanized Fibre Co., Wilmington, Del.*

Mold, Flexible

Produces epoxy machine parts at low cost. (97E)

. . . Vinyl resin plastisols, functioning as flexible molds, provide fast and economical method for casting machine parts from epoxy resins and imbedding electronic assemblies in epoxy casings. One gallon of Bakelite vinyl plastisol makes about 100 flexible molds each of which is good for about 5 castings or potted assemblies.—*Houghton Laboratories, Inc., Olean, N. Y.*

Molding Compound

Glass-filled silicone. (97F)

. . . Dow Corning 301 outperforms conventional organic molding compounds in the range of 400 F. After molding 10 min. at 340 F., tensile strength is 10,000–12,000 psi.; impact strength is 15–22 ft.-lb. per in. of notch. 301's flex strength ranges from 12,000–14,000 psi. at room temperature to 5,000 psi. at 392 F.—*Dow Corning Corp., Midland, Mich.*

Nylon, New

Has unusually high molten viscosity. (97G)

. . . Unlike conventional nylon which has a sharply defined melting point and changes rapidly from a solid to a watery fluid, Nylon 6 retains sufficient body at melt temperature to be conveniently extruded. Called Plaskon 8200 by the manufacturer, Nylon 6 also has controllable crystallinity—allowing variation in finished product's physical properties in thin sections, even to forming clear products. Plaskon can be used in extruding clear film, blow-molding bottles and forming intricately shaped objects. Price—$1.45/lb.—is competitive.—*Barrett Div., Allied Chemical & Dye Corp., New York 6, N. Y.*

Nylon, Powdered

For abrasion-resistant resins. (97H)

. . . Powdered nylon improves abrasion resistance of epoxy and phenolic resins used in plastic tooling. Addition of 10–25% nylon powder ups epoxy abrasion resistance four times and suspends metallic fillers used to prevent exotherms.—*National Polymer Products, Inc., Reading, Pa.*

Nylon Resin

Resists sunlight. (97I)

. . . Sunlight-resistant nylon resin is useful for outdoor applications; agricultural machinery, marine hardware, automotive parts. Zytel 105 BK-10 combines this resistance with nylon's corrosion resistance, toughness, light weight.—*E. I. du Pont de Nemours & Co., Wilmington, Del.*

RESINS & PLASTICS, continued

Phenolic, Reinforced

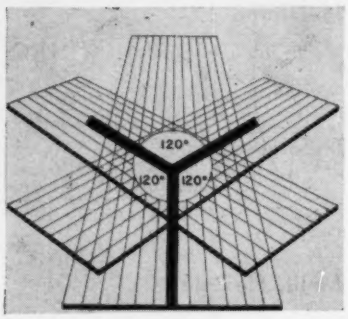
Rigid, strong at 500 F. (98A)

. . . Glass-reinforced phenolic plastic boasts exceptional properties at 500 F.: tensile strength of 40,000–50,000 psi. and compressive strength of 30,000–35,000 psi. 500 F. is far above limits of glass-laminated polyester and epoxy plastics, is superior to tolerances of aluminum and magnesium. Laminate resists corrosion and shock, has greater strength-to-weight ratio than conventional metals. Manufacturing and tooling techniques are less costly than for most analagous metal parts. Most applications, to date, have been in the aircraft industry. — *Curtiss-Wright Corp., Wood-Ridge, N. J.*

Plastic, Reinforced

Has equal strength in all directions. (98B)

. . . Scotchply reinforced plastic features elimination of handwork in production of plastic members and uniformity of properties. It consists of one or more epoxy or polyester plastic sheets reinforced with lineally aligned glass filaments. Sheets are bonded together to obtain either a directional or isotropic (equal strength in all directions) strength pattern. Because it's uncured at point of sale, Scotchply can be readily formed by mass production methods.— *Minnesota Mining and Mfg. Co., St. Paul, Minn.*



Plastic "Steel"

Pliable as putty, hardens no rigid mass. (98C)

. . . To Devcon, a pasty mixture of 80% powdered steel and 20% plastic, add dash of hardening agent, then stir mixture and press or pour into shape you want. It hardens in two hours without heat or pressure to rigid, steel-like mass. Devcon can fill holes in castings; cement steel, aluminum, bronze, cast iron, porcelain; make small machining fixtures; make forming dies for home radiator tops. — *Chemical Development Corp., Danvers, Mass.*

Plasticizer

For PVC and vinyl copolymers. (98D)

. . . A butyl benzyl phthalate, Santicizer 160, is a 25¢-per-lb. colorless primary plasticizer for PVC and vinyl copolymers. It reduces costs while adding stain resistance, increasing fusion rates and imparting greater tensile strength. —*Monsanto Chemical Co., St. Louis 4, Mo.*

Plasticizer, Benzoate

Tank car lots. (98E)

. . . Benzoate plasticizer Flexol 77-G is compatible with polyvinyl chloride, acetate and butyral; ethyl cellulose; polystyrene; cellulose acetate butyrate.— *Carbide and Carbon Chemicals Co., New York 17, N. Y.*

Plasticizers

For vinyl chloride resins. (98F)

. . . Benzoic acid esters of diethylene glycol (Benzoflex 2–45) and dipropylene glycol (Benzoflex 9–88)—first commercial low-freezing plasticizer of its type—are primary plasticizers for vinyl chloride resins. As primary plasticizers, they lower processing time and temperatures.—*Tennessee Products and Chemical Corp., Nashville, Tenn.*

Plasticizers, Light-Colored

For manufacture of transparent vinyls. (98G)

. . . Lighter colored plasticizers—specifications reduced by one-half—are available. Dioctyl phthalate is down from 60 to 25 Hazen; dicapryl phthalate is lowered from 100 to 50 Hazen. Both plasticizers should be especially useful in the manufacture of transparent vinyl sheeting and tubing.—*Barrett Div., Allied Chemical & Dye Corp., New York 6, N. Y.*

Plasticizers, Polyvinyl

Higher alcohol phthalates for vinyl chloride formulations. (98H)

. . . Monsanto: Santicizer 601, a 50–50 mix of di-n-octyl, n-decyl phthalate (DNODP) and diisooctyl phthalate (DIOP); and Santicizer 602, a 50–50 mix of diisodecyl phthalate (DIDP) and DIOP. 601's flexibilizing properties and low volatility make it superior to di(2-ethylhexyl)phthalate (DOP) or to DIOP alone. 602 imparts alkali resistance to vinyl floor tile. Carbide: Flexol plasticizers 810 and 812. Both higher alcohol phthalates have reduced volatility, improved low temperature properties, electrical attributes. Both flexols—in vinyl plastics—show heat and light stability, freedom from odor, resistance to water extraction.—*Monsanto Chemical Co., St. Louis 4, Mo.; Carbide and Carbon Chemical Co., New York 17, N. Y.*

DU PONT

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CHEMICAL ENGINEERING NEWS

PROPERTY AND APPLICATION DATA ON THESE VERSATILE ENGINEERING MATERIALS: "ZYTEL," "ALATHON," "TEFLON," "LUCITE."

NO. 8 — 1955

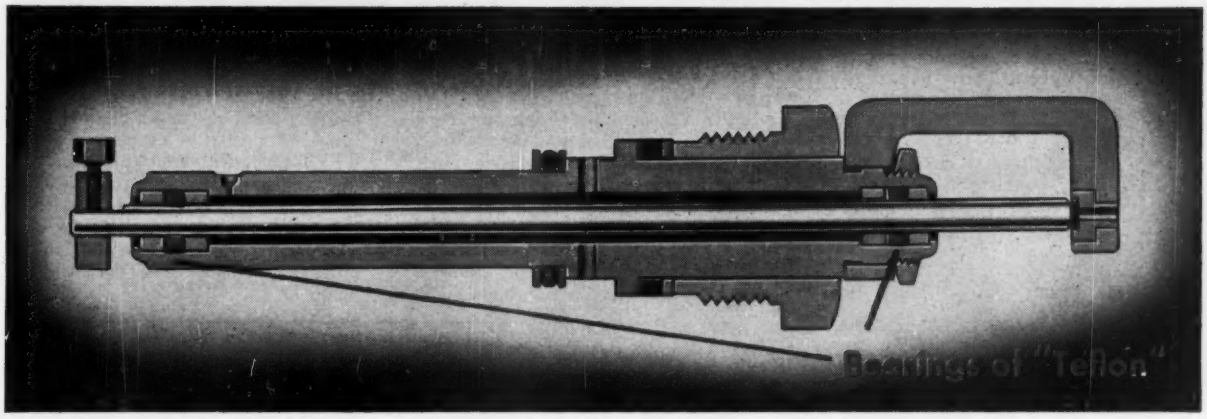


Diagram of a high-pressure flow measuring instrument, manufactured by the Taylor Instrument Companies, Rochester, New York. Bearings of Du Pont "Teflon" tetrafluoroethylene resin (in red) prevent leakage and hold friction to a minimum.

Bearings of Du Pont TEFLON® Prevent Leakage, Reduce Friction

"Teflon" tetrafluoroethylene resin solved a design problem for a manufacturer of instruments measuring differential pressure. The instrument manufacturer reports that these bearings of "Teflon" readily withstand working pressures involved. The low-friction characteristics of tough, resilient "Teflon" permit easy operation without lubrication, and prevent freezing. Bearings of "Teflon" will not cause pitting of the shaft.

"Teflon" is Chemically Inert

"Teflon" tetrafluoroethylene resin is inert to all chemicals normally found in industry. Only molten alkali metals and fluorine at elevated temperatures and pressures have any effect on "Teflon."

Chemical inertness, combined with a working temperature range that extends from –450°F. to 500°F., demonstrates the amazing versatility of Du Pont "Teflon."

How can you use this resistance to pressure, abrasion, corrosion and temperature extremes in *your* process operations? For complete property and test data on "Teflon" tetrafluoroethylene resin, clip and mail the coupon.

Press on, snap off! "Alathon" polyethylene resin's toughness and flexibility are utilized in a new, improved cover for acid cleansing compounds. "Alathon" can be molded in a wide range of attractive colors. (Closure for "Sani-Flush" cleanser can molded by Nylon Molded Products Corporation, Garrettsville, Ohio.)

Pipe of "Alathon" makes superior chemical process lines

Process pipelines of Du Pont "Alathon" polyethylene resin are flexible and light in weight for ease of handling. Pipe of "Alathon" is inert to most common industrial chemicals. It will not corrode or scale, and is superior in its ability to withstand top rated pressures for long periods.

Freezing and expansion problems are avoided with tough, flexible pipe of Du Pont "Alathon." The material is odorless, tasteless, and non-toxic. Because "Alathon" is available in a variety of colors, piping installations can be color-coded.

Investigate the economies of installation and maintenance which are inherent in piping extruded of Du Pont "Alathon" polyethylene resin.

NEED MORE INFORMATION?

CLIP THE COUPON for additional data on the properties and applications of these Du Pont engineering materials.

**"Teflon," "Alathon," "Zytel" and "Lucite" are registered trade-marks of E. I. du Pont de Nemours & Co. (Inc.).*

E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Department
Room 2510, Du Pont Building, Wilmington 98, Delaware
In Canada: Du Pont Company of Canada Limited,
P.O. Box 660, Montreal, Quebec.

Please send me more information on the Du Pont engineering materials checked: ☐ "Teflon"* tetrafluoroethylene resin; ☐ "Alathon"* polyethylene resin; ☐ "Zytel"* nylon resin; ☐ "Lucite"* acrylic resin. I am interested in evaluating these materials for_____

NAME_____

COMPANY_____ POSITION_____

STREET_____

CITY_____ STATE_____

TYPE OF BUSINESS_____

For Inquiry Code Numbers, see Master Index on Page 317

RESINS & PLASTICS, continued

Plastics, Molding

Styrene; acrylonitrile styrene; phenolic. (100A)

. . . SMD-3500, RMD-4001, BMG-5000 Brown 15 are three molding plastics. SMD, a styrene, flows easily in molders, resulting in fast production and strain-free products. RMD, an acrylonitrile styrene is tough (tensile strength: 11,700 psi.; flex strength: 15,700 psi.), yet easily worked, chemically resistant. BMG, a brown phenolic, has wide molding latitude, faster curing time, maintains critical dimensions at hot temperatures, releases easily from the mold.—*Bakelite Co., New York 16, N. Y.*

Polyethylene, Low-Pressure

Based on Ziegler reaction. (100B)

. . . Koppers claims to be first with a new low-pressure polyethylene—Super Dylan—available for evaluation. New polyethylene is made by a process based on Ziegler patents and is tough, rigid, heat resistant, glossy-surfaced. Interest in the Ziegler process hinges on unusual plastic properties of product which make it fit for jobs that polyethylene couldn't do before except, perhaps, through irradiation. But even irradiated polyethylene is not considered competition for Super Dylan. For although radiation imparts properties equal and superior to low-pressure poly, it's still expensive. And assuming cost of radiation drops, new poly already possesses many irradiated features. Super Dylan's initial price is 43¢ a lb. —2¢ higher than conventional polyethylene.—*Koppers Co., Inc., Pittsburgh 19, Pa.*

Polyethylene, Modified

Polymer-elastomer blends give better coatings for paper, wire. (100C)

. . . Mixing polyethylene with elastomer materials yields a product superior to straight polyethylene for many purposes. Paper coated with new Ladcote-modified polyethylenes is more resistant to water vapor transmission, less apt to crack, adheres better to webs. Wire coated with Ladcote has improved resistance to stress cracking, is useful for low-loss insulation in high frequency work. Molded articles are more flexible and softer than those made from unmodified base resin. Polyethylene-elastomer tubing is used as a component of aerosol containers.—*L. A. Dreyfus Co., South Plainfield, N. J.*

Polystyrene

High impace. (100D)

. . . Styron 480, super high-impact polystyrene, is 5–10 times tougher than general purpose polystyrene; has greater elongation. Premium price (41¢ per lb. vs. 36¢ for high impact grade) offset by industry's need for more durable, "metal-strong" plastic products.—*Dow Chemical Co., Midland, Mich.*

Polystyrene, Light-Stable

Has better non-yellowing properties than conventional material. (100E)

. . . Styron 647 is highly light-stable (eight to ten times more stable than regular polystyrene) polystyrene plastic which retains general-purpose polystyrene's properties—high clarity, brilliance, good fabrication. Price is same as conventional material. Expected uses include light fixture parts, instrument dial faces and panels, etc.—*Dow Chemical Co., Midland, Mich.*

Polyvinyl Chloride Resin

Made at 315-330 F. (100F)

. . . Diamond PVC-45 is a high-temperature polyvinyl chloride resin having high bulk density, heat stability, color retention, dry blending and free flowing characteristics.—*Diamond Alkali Co., Cleveland 14, Ohio.*

Reinforcers, Plastic

Simplify construction, strengthen plastic car bodies. (100G)

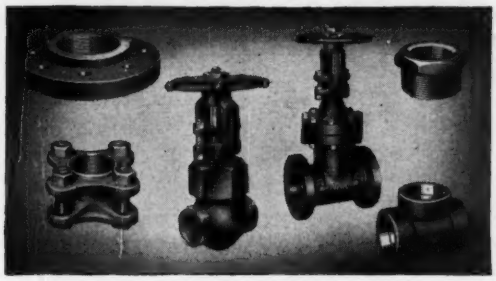
. . . Vibrin VPA—a blue, water-soluble material—prevents plastic body sticking to mold. Color helps spray operator check uniformity of release coating as it goes on. Vibrin Shellcoating, a polyester coating, is applied to mold atop release agent, covers reinforcing fibers, gives finish that takes paint smoothly, resists impact. Vibrin 151, a polyester body resin, saturates glass fiber reinforcement, lends enough flexibility to take road shock without cracking.—*U. S. Rubber Co., New York 20, N. Y.*

Silicones, Ready-to-Use

Melt, foam, cure in one step. (100H)

. . . Three silicone resin mixtures—R-7001, 7002 and 7003—liquefy, foam and harden (when heat's applied) to produce low-density foams. Foams are stable and serviceable as high as 700 F., have good electrical and thermal conductivities, good water adsorption properties. Powders can be cast in foam blocks or sheets, made in sandwich structure or foamed in place to desired shape. Cost: about $5 per lb.—*Dow Corning Corp., Midland, Mich.*

Designed for today's *Tough* service demands



DROP FORGED VALVES AND FITTINGS FOR TOUGHNESS AND TROUBLE-FREE SERVICE

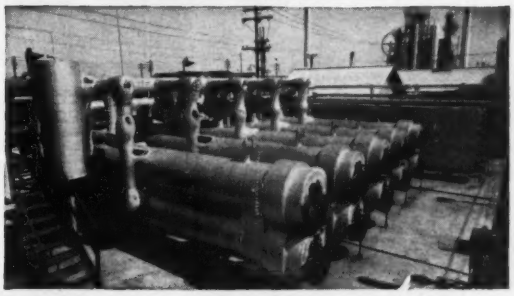
Drop forged from carbon and alloy steels, Vogt valves, fittings and flanges will safely handle liquids and gases at high pressures and high temperatures in power plants, chemical plants, petroleum refineries, etc. The complete line includes flanged, screwed and socket weld end globe, gate and check valves—ells, tees, and crosses—couplings—bushings—plugs—unions—flanges and flange unions—and welding heads.

MODERN STEAM GENERATORS

Vogt steam generators are designed to give maximum rating in a minimum of space, with high efficiency and low maintenance expense. Bent tube types and straight tube, forged steel sectional header types to burn solid, liquid or gaseous fuels meet every power, process or heating requirement.

PROCESS EQUIPMENT FOR EVERY SERVICE

Vogt constructs process equipment in wide variety to all Codes. Stills and towers, oil chillers, crystallizers, heat exchangers, molding machines, etc., serve in the manufacture of oils, greases, 100 octane gasoline, synthetic rubber, chemicals and related products around the world.



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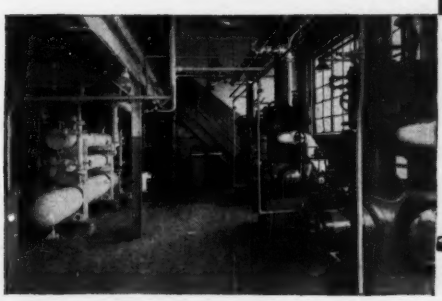
Our modern shops produce a wide variety of equipment from special metals and alloys to fight corrosion and product discoloration or contamination. Fabrication procedures insure that corrosion resistant properties of welds will match that of the materials used to construct the equipment.



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More than 70 years of engineering and manufacturing experience is incorporated in Vogt refrigerating and ice making equipment. Absorption Systems, Compression Systems, and Tube-Ice Machines in a wide range of capacities serve industrial and processing plants, and institutions, here and abroad.

RESINS & PLASTICS, continued

Tapes, Polyethylene

Glass-reinforced. (102A)

. . . Two reinforced polyethylene tapes, No. 875 and No. 877, are available for industrial evaluation. Both were originally developed to reinforce plastic panels for government weather balloons. Pressure-sensitive No. 875 has a tensile strength of 150 psi. per in. of tape width; No. 877, 100 psi. per in. of tape width. Other applications at present are: edge reinforcement in woven wire and silk screen industry; reinforcement for light-weight plastic tarpaulins. — *Minnesota Mining and Mfg. Co., St. Paul 6, Minn.*

Thickener, Latex

Effective at low concentrations. (102B)

. . . At concentrations of 1% or less Acrysol G-110 is 3-20 times more effective than currently available thickeners. Latices thickened with this ammonium polyacrylate solution have good storage stability, don't undergo phase separation or creaming. Viscosity stays constant with aging, is unaffected by high pH and temperatures. Acrysol G-110 functions in presence of sodium, calcium and magnesium salts.—*Rohm & Haas Co., Philadelphia 5, Pa.*

• Rubber and Rubber Chemicals

Antioxidant

Stops rubber cracking. (102C)

. . . UOP 88 is an antioxidant designed to halt surface cracking of rubber products due to ozone attack. It's effective even with GR-S composition. UOP 88 performs well where coating-type antioxidants fail and where high temperatures prevail. —*Universal Oil Products Co., Des Plaines, Ill.*

Fibrous Rubber

Web-like structure makes porous products possible. (102D)

. . . Filastic rubber consists of many rubber fibers in random distribution and bonded at their points of contact. Web formation is something like spinning of cellulose acetate and nylon. Fibers are strongly linked so that rubber layer may be sewn, tacked, stapled, cut at the edge without forming a running tear. Fibrous structure also accounts for high porosity, low density and resilience. — *American Viscose Corp., Philadelphia 3, Pa.*

Pellets, Rubber

Unvulcanized, mix readily with asphalt. (102E)

. . . Use of rubber-asphalt road toppings gets boost from pelletized rubber. Pellets can be shipped in bags or drums, stored at asphalt plant and tossed into mixing mill where they break down in 60 sec., spreading rubber evenly through mix. Pellets cost only 26¢ a lb.—About one-third below the price of the manufacturer's previous product.—*Naugatuck Chemical Div., U. S. Rubber Co., New York 20, N. Y.*

Silicone Rubber

Has strength of other rubbers. (102F)

. . . Cohrlastic HT is a silicone rubber with the strength of other rubbers. New reinforcing fillers give it tensile strengths ranging from 1,000 to 2,000 psi. and tear strengths of 200 to 300 lb. per linear in. (compared to 800 to 900 psi. and 100 lb. per linear inch for earlier silicone rubbers).—*Connecticut Hard Rubber Co., New Haven, Conn.*

Silicone Rubber

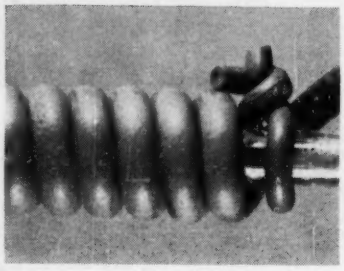
"Controlled reactivity" simplifies compounding. (102G)

. . . W-96 Silicone Gum has controlled number of undisclosed reactive groups built into the molecule to speed cross linking to the cured state. Easy curing permits filling with carbon blacks and handling of compounding sections up to 3-in. thick. Finished W-96 rubber has good resistance to high-pressure steam and low compression set.—*Linde Air Products Co., New York 17, N. Y.*

Silicone Rubber

Insulates motors and generators. (102H)

. . . Compared with other motor insulations (organic rubber and resinous), Silco-Flex silicone rubber insulation features better thermal conductivity, abrasion resistance, dielectric life (up to 250 C.), moisture resistance, flexibility and resilience. It also withstands most atmospheric contaminants, weak acids, alkalis, lube oils, corona and weathering.—*Allis-Chalmers Mfg. Co., Milwaukee., Wis., and Dow Corning Corp., Midland, Mich.*



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European: CHEMITALIA COLORI, Corso Venezia, N. 56, Milano, Italy

RUBBER & RUBBER CHEMICALS, continued

Softener, Rubber

Available in quantity. (104A)

. . . Methylbenzyl ether, a rubber softener and tackifier, is now available in quantity. Its structure indicates high solvency for synthetic resins at high temperatures; it's also a useful solvent for countercurrent extraction of pharmaceuticals. — *Carbide and Carbon Chemicals Co., New York 17, N. Y.*

Styrene

Rubber grade available to industry. (104B)

. . . Three major producers announce availability of synthetic rubber-grade styrene (0.2% sulfur-containing) to industry at 18¢ a lb.—3¢ a lb. price advantage over purer commercial grade styrene. Lower purity styrene is believed suitable for any application—essentially synthetic rubber end-uses—save polystyrene manufacture.—*Dow Chemical Co., Midland, Mich.; Koppers Co., Inc., Pittsburgh 19, Pa.; Monsanto Chemical Co., St. Louis 4, Mo.*

Synthetic "Natural"

Promises price stability for imported rubber. (104C)

. . . Successful duplication of the natural rubber molecule will effectively place a ceiling on the price of imported tree-grown rubber and could eventually make the U. S. independent of foreign rubber in an emergency. All this, despite the fact that existing government-owned synthetic rubber plants can't produce the man-made "natural" rubber—which would cost more than synthetic GR-S rubber and, at best, could only supplement it (not replace it). —*Goodrich-Gulf Chemicals, Inc., Pittsburgh 30, Pa.*

Tire, Rubber

Weighs 2,600 lb. (104D)

. . . U. S. Royal Con-Trak-Tor tire is used for earth-moving and strip mining equipment, bottom dump trucks and self-loading scrapers. Each tire stands 8 ft. tall, is 30.00-33 in size, has 3½-in. tread, takes 16 hr. to cure, consumes enough nylon for 3,000 pr. women's hose. Price is $4,949.50, about $1,000 more than next biggest tire—*U. S. Rubber Co., New York 20, N. Y.*

Wax, Petroleum

Refined, uniform. (104E)

. . . Sunoco Anti-Chek petroleum wax prevents surface checking and cracking of rubber products. Since it's a primary product, not a blend of wax by-products from lube oil production, Anti-Chek should give the same performance from batch to batch.—*Sun Oil Co., Philadelphia 3, Pa.*

• Surface Active Agents

Catalyst, Nickel

Ups gas rates in ammonia synthesis. (104F)

. . . G-29, nickel-base catalyst, gives 25% greater production capacity for ammonia synthesis gas from natural gas by steam-reforming. At production rates obtainable with older catalysts, G-29 will work at top efficiency at lower reaction temperatures, will save process fuel costs. Catalyst is about 27% nickel, becomes active in reforming hydrocarbons at 1,100-1,850 F. Shrinkage below 1,850 F. is less than 5%.—*Girdler Co., Louisville 1, Ky.*

Detergent, Non-Ionic

Low foamer. (104G)

. . . Non-ionic detergent, CF-10, is tailored for use in formulations where conventional detergents may not be satisfactory due to excessive foam or suds. It has good chemical stability, is a low foamer even at high concentrations and vigorous agitations.—*Rohm & Haas Co., Philadelphia 5, Pa.*

Detergent, Non-Soap

100% active compound; devoid of fillers, salts. (104H)

. . . Nu-D-Tergent, patented organic non-soap detergent, removes soils by acid neutralization, wetting out, solubilization, displacement, emulsification. Concentrations of less than 1 oz. per gal. show surface tensions of less than 30 dynes. Product used for washing car bodies, cleaning floors, cleaning painted surfaces.—*Kelite Products, Inc., Los Angeles 12, Calif.*

Extinguisher, Foam

Douses flame in record time. (104I)

. . . Unox is a foam extinguisher containing a 1-2% water solution of Tergitol wetting agents whipped to a dense foam. Has doused kersosene fire (660 gal. kerosene in 2,500 sq. ft. diked area around a water tank) in 7½ min.—*Carbide and Carbon Chemicals Co., New York 17, N. Y.*

Foam Reducer

For paints. (105A)

. . . Polyethylene Glycol 400 Monolaurate S-307 is a good pigment wetting agent, paint leveler and emulsifier yet does not cause excessive foaming. — *Glyco Products Co., Inc., Brooklyn, N. Y.*

Salts, Perlauric Acid

Have 2-in-1 action. (105B)

. . . Salts of perlauric acid combine in one compound properties of a soap and germicide. Alkaline perlauric salt solutions show surface-active properties of lauric acid soaps and have greater germicidal power than sodium laurate. — *Becco Chemical Div., Food Machinery and Chemical Corp., Buffalo 7, N. Y.*

Silica Gel

Low density, high absorption. (105C)

. . . Syloid 244, extremely fine silica gel (1-2 microns), weighs 4.5 lb. per cu. ft. Gel becomes transparent when mixed with vehicles, remains in suspension indefinitely in most organic solvents. Absorption: 240 lb. of oil per 100 lb. silicon dioxide. — *Davison Chemical Corp., Baltimore 3, Md.*

Silicones for Leather

Guard against moisture, applied at tannery. (105D)

. . . Dri-Film silicone water repellent protects leather against water yet lets it breathe and flex properly. Processed leather retains its weatherproofing through laundering and dry cleaning. Stitched garments won't rip at the seams because of shrinkage. Silicone treatment can protect suedes, grains, kid skins.—*General Electric Co., Chemical Div., Pittsfield, Mass.*

Silicones for Wool

Lend more oil and water repellency. (105E)

. . . Dow Corning 105 Emulsion, a silicone finish, is applied to wool to repel grease and oil as well as water. 105 Emulsion cures in 10 to 20 min. at temperatures as low as 250 F. to impart wrinkle resistance and increase flex abrasion resistance 30-65%.—*Dow Corning Corp., Midland, Mich.*

Surfactant

Has long lasting stability, broad solubility. (105F)

. . . Petro AA, an alkyl aryl sodium sulfonate, is soluble and stable in water, polar organics, most acids, alkalis, alkaline salt solutions, metallic solutions. It markedly reduces surface tension of water, acids, alkalis. Uses include: chemical reactions; wetting, penetrating, dye carrying agent in textiles; pulping processes; pigments; viscosity reduction; petroleum (water flooding, etc.); rubber. — *Petrochemicals Co., Long Beach, Calif.*

Surfactants, Fluorocarbon

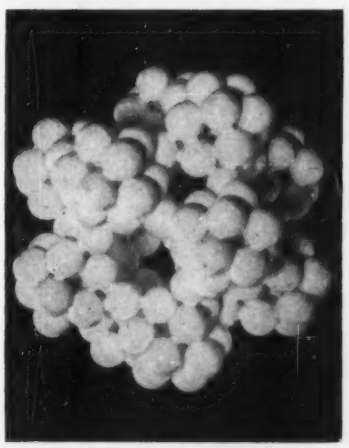
For oil industry. (105G)

. . . Fluorocarbon surfactants can reduce fire hazards, evaporation losses and air pollution in the oil industry. They form a thin film on the surface of stored petroleum products, are effective in concentration as low as 0.002% by weight of gasoline.—*Minnesota Mining & Mfg. Co., St. Paul, Minn.*

Zeolites, Synthetic

Adsorb or reject materials on basis of difference in molecular size. (105H)

. . . Molecular Sieves, a selective adsorbent, present to a mixture of chemicals a surface systematically dotted with holes of equal molecular diameters. Molecules small enough to fit through the holes are "adsorbed," molecules too big are thrown off. Commercial potential lies in the ability to separate straight-chain aliphatics from either branched-chain or cyclic aliphatics, or from aromatics, purely on the basis of their respective physical contours. Added to size selectivity powers, MS can preferentially adsorb different materials according to polarity, e.g. polar from non-polar, saturates from unsaturates, etc. They have an advantage over standard distillation and even over other adsorbents because they work independently of boiling points, can separate substances with identical boiling points but different molecular sizes and/or polarity. Too, they have great adsorptive capacity at low concentrations of adsorbate and at high temperatures. Molecular Sieves can be used in hydrocarbon separation, gas purification, waste gas recovery, both static and dynamic drying of gases. Though cost per lb., $1.95, is high as compared with activated carbon (60-70¢) and silica gel (28-40¢), MS show promise in effecting separations and recoveries of which the other adsorbents are not capable.—*Linde Air Products Co., New York 17, N. Y.*



• Textile Chemicals and Synthetic Fibers

Bleach, Textile

Eliminates yellowing. (106A)

. . . Amino naptha acetylide, a bleaching solution which eliminates yellowing, is expected to solve a major defect in Japanese synthetic textiles. It can be mass produced at low cost permitting Japan to suspend import of bleaches. — *Tokyo Institute of Technology, Tokyo, Japan.*

Cotton, Chemically Treated

Yields new textile products with superior properties. (106B)

. . . Now under investigation or in commercial practice are chemical conversions and modifications of fibrous cotton to yield new textile products with superior properties but which retain the original character and inherent advantages of cotton fiber. Commercial processes: treatment with caustic soda for more elasticity, clinging power; lead chromate for greater resistance to sunlight; acetic anrydride for resistance to heat, rot, acids. Semi-commercial processes: treatment with acrylonitrile for more dye receptivity, resistance to heat, rot; THPC, methylolmelamine for flame resistance; aminoethyl sulfuric acid for improved dye receptivity and chemical reactivity; monochloracetic acid for water solubility, greater reactivity; bromoalkyl phosphate for greater flame resistance. Experimental processes: treatment with ethylamine provides greater chemical reactivity, toughness; propiolactone gives better dye receptivity; fast dyes provide water repellancy as well as flame resistance. Anhydrous ethylamine reduces cotton's crystalline cellulose without doing any harm to the fiber. The enhanced chemical reactivity that results suggests a decrystallization step prior to other chemical transformations. — *Southern Regional Research Laboratory, New Orleans 19, La.*

Dyes, Acetate

Have unequalled wash fastness. (106C)

. . . Eastofix acetate dyes have, it's claimed, a wash fastness heretofore unequalled while retaining high fastness to light and gas fading. Use of dyed acetate yarn will expand in such fields as draperies, upholsteries and sportswear. — *Eastman Chemical Products, Inc., Kingsport, Tenn.*

Dynel Clothing

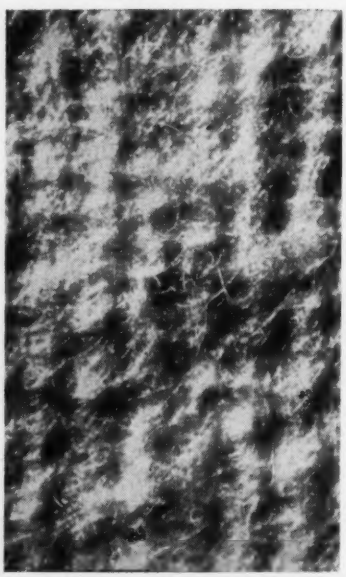
Chemically resistant. (106D)

. . . Emulsion-treated Dynel fabric gives protection against splashing chemicals, yet keeps men comfortable. Protective treatment doesn't harm porosity or "breathing" ability of clothing. — *Chem-Wear, Inc., Darien, Conn.*

Felts, Synthetic

For filtration problems. (106E)

. . . Filtaweb Felts are tough, nonwoven fabrics made of stable synthetic fibers—nylon, Dacron, etc.—meshed tightly together by pressure and a resinous binder. Felts offer these operating advantages: (1) tight, pressed structure retains smaller particles than many finely woven cloths of same weight, (2) felted fabric has, by its nature, high porosity (as much as 70% voids), (3) non-woven structure enables easy and quick fabrication of filter cloth on the job. Synthetic fiber felts are rugged enough to do many jobs requiring a synthetic filter medium. In their manufacture, fibers are carefully crosscarded —aligned in two directions for overall strength and evenness—then pressed together with a binder. Result: a tight, smooth fabric which supports a filter cake almost entirely on the felt's surface, resists clogging of interstices, releases easily from most materials. Premium grade, with a smooth, almost slick "eggshell" finish on one side, is also available. This gives maximum cake release and cleaning ease, yet retains its permeability. Although most work with synthetic fiber felts has been done with plate and frame filter presses, adaptation to rotary equipment is under study. Although filter felts are not all purpose substitutes for woven materials, they do provide the chemical processor with a new class of filter medium, one that should get more consideration, especially from a field as full of specialized problems as is filtration.—*Brosites Products Corp., New York, N. Y.*



For the new look in:

Paper–glossier wraps for greater sales appeal, improved seal and scuff. The package competes with costlier see-thru wraps in appearance.

Waxes–fortified and up-graded for year 'round processing advantages in your plant.

Printing Ink–greater slip resistance and improved scuff, sharper color contrast.

Rubber–an excellent modifier and lubricant for natural and synthetic elastomers. Replaces costly vegetable and natural waxes.

Paper Box Board–improves coatings and other functional properties.

Cork Tile–gets a new high gloss, scuff-resistant finish.

Asbestos Siding–protection from handling and for improved weathering.

New Look and improved qualities for waxes, printing inks, paper, paper box board, rubber, asbestos siding, and many other products are being obtained by the addition of low-molecular-weight, low-viscosity A-C POLYETHYLENE. The low cost of A-C POLYETHYLENE, its ease of handling and the profitable improvements it contributes, should prompt you to evaluate this versatile material in your plant without delay.

Write on your letterhead today for additional data and samples indicating your intended use. A-C POLYETHYLENE is available in regular or emulsifiable form.

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*trade-mark

TEXTILE CHEMICALS & SYNTHETIC FIBERS, continued

Fiber, Nylon 6

Takes deep color dyes. (108A)

. . . Nylon 6 fiber, based on the polyamide from caprolactam, is said to take deep color dyes better than other synthetic fibers. Thus you can get two or more separate colors with a single dye bath by using the two types of nylon, 6 and 66, alone or together with Dacron, which dyes still differently.—*National Aniline Div., Allied Chemical & Dye Corp., New York 6, N. Y.*

Fiber, Synthetic

Cellulose triacetate to vie with other synthetics. (108B)

. . . Arnel, one of the latest additions to the synthetic fiber market, is said to achieve the best balance yet among performance, appearance, versatility and price. For the mill man: Arnel can be blended easily with other fibers, is easy to dye and finish, isn't too expensive (55¢ a lb. vs. 34-39¢ for acetate and rayon, $1.30-1.80 for Orlon, nylon, Dacron, Acrilan). For the consumer: Arnel is machine-washable and driable at any temperature, resists wrinkling.—*Celanese Corporation of America, New York 16, N. Y.*

Polyvinyl Alcohol Fiber

Japan producing 15 million lb./yr. to compete with cotton. (108C)

. . . Polyvinyl alcohol fiber (vinylon) is being turned out in Japan at rate of 20 ton/day. Price is now 70¢/lb., may soon be 50¢/lb. Target: cotton's 35¢/lb. Vinylon soaks up water to tune of 30%, can replace cotton in underwear, sheets, similar materials where fibers come in contact with the body. Since polyvinyl alcohol itself is water soluble, fibers can be spun from water solution, making process both simple and economical. Promotion of vinylon stems from belief that the world needs an inexpensive synthetic fiber to replace natural fibers that are all too sensitive to the whims of nature. — *Kurashiki Rayon Co., Toyama, Japan.*

Rayon Fiber, Industrial

For pressure hose and belting. (108D)

. . . Fortisan-36 is an industrial rayon fiber designed to fill the gap between high-tenacity rayon on one side and glass fiber and industrial steel wire on the other. Fiber is now available in 800 denier continuous filament (heavier deniers are expected) and is qualified for use in power transmission belting, high-pressure hose, conveyor belts, etc. Price of Fortisan-36 is $1.50 a lb.—*Celanese Corp. of America, New York 16, N. Y.*

Yarn, Acetate

May compete with cotton and synthetics. (108E)

. . . X-100, a "modified acetate" yarn, has higher melting point than conventional acetate, better launderability. It also has higher dyeability and lacks clamminess of some woven synthetic fibers, can be spun on conventional textile machinery. X-100 is priced competitively with cotton and regular acetate.—*Celanese Corp. of America, Summit, N. J.*

Yarn, Neoprene-Treated

Yields washable fabric. (108F)

. . . Neoprene-treated yarn yields fabric that can be washed and won't fray or pull apart when wet. Yarn may recapture some of fiber auto seat cover market lost to more expensive (and stronger when wet) plastics.—*E. I. du Pont de Nemours & Co., Wilmington, Del.*

Yarn, Rayon Tire

Gets play from three major producers. (108G)

. . . Three super strength, high tenacity rayon tire yarns are on the market. First came Du Pont's Super Cordura in July, 1953; then North American Rayon's premium product in August, 1954; latest is Super Rayflex by Avisco. All three yarns are priced at 64¢ a lb., or 3¢ over ordinary high tenacity rayon. Competition between producers has led to this 64¢-a lb. price.—*American Viscose Corp., Philadelphia 3, Pa.; North American Rayon Corp., New York, N. Y.; E. I. duPont de Nemours & Co., Wilmington 98, Del.*

• Miscellaneous Chemical Products

Alloy, Titanium

Super heat-proof. (108H)

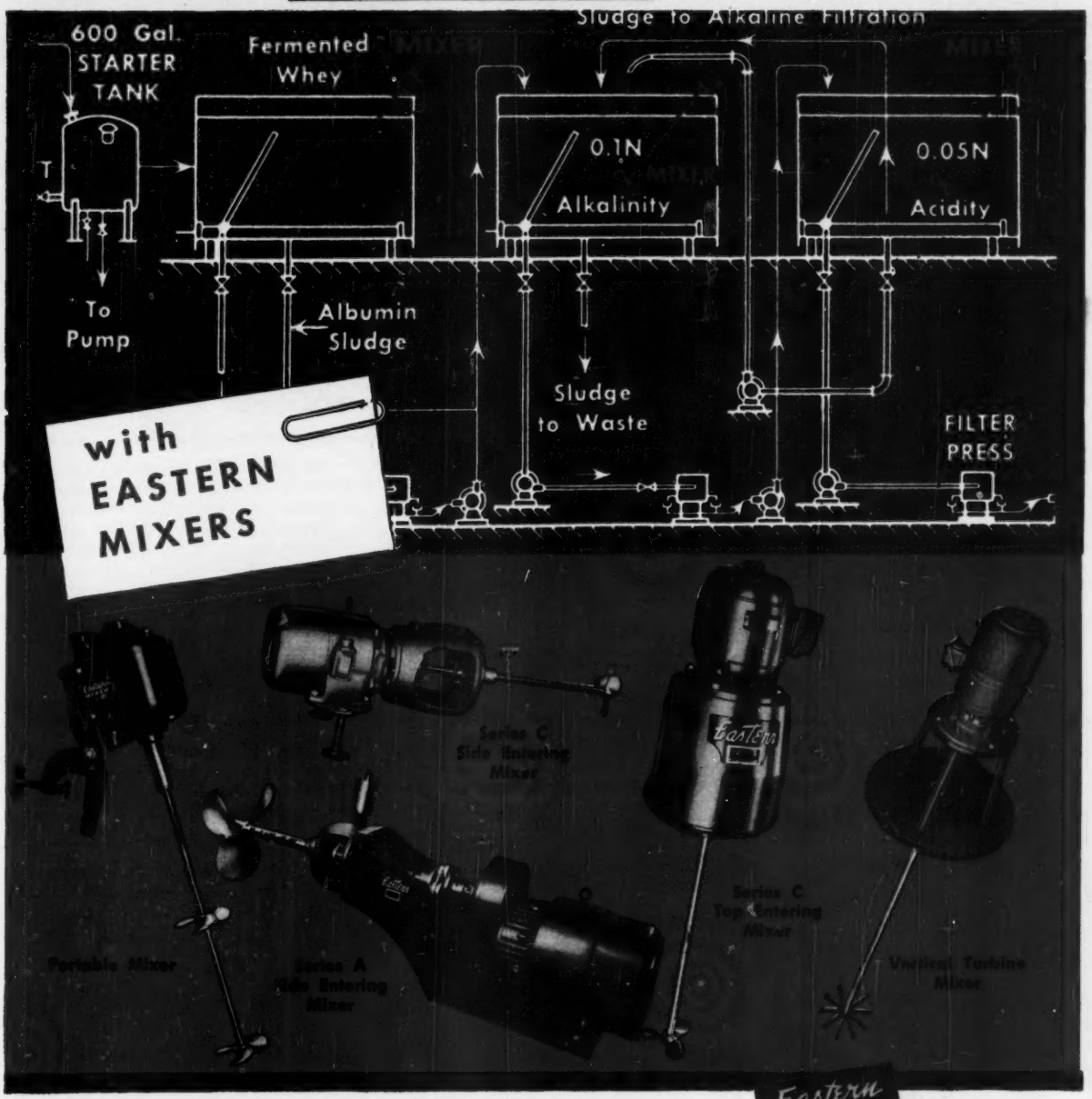
. . . Test gas turbine with critical parts made of Kentanium, a sintered titanium carbide, endured runs of 100 hr. at 1,850–1,900 F. and 30,000 rpm. Big drawback: it's too brittle for practical use.—*Kennametal, Inc., Latrobe, Pa.*

Ammonium Nitrate

More safely transported. (108I)

. . . Temperature and pressure limits have been established for safe handling of ammonium nitrate. This means that explosions, fire, spontaneous heating can be prevented and all types of NH_4NO_3 can be shipped anywhere with minimum risk.—*Arthur D. Little, Inc., Cambridge 42, Mass.*

RELIABLE FLUID MIXING in PROCESSING



Eastern's Mixers are designed to meet the needs of today's chemical and industrial processes. Many types are available to satisfy all conditions of fluid consistencies and tank sizes. Selection may be made from a wide range of horsepower, speed, and construction materials. Motors with various voltage ratings and enclosures are also furnished.

PORTABLE MIXERS

Series H at 1725 R.P.M., Series S at 1125 R.P.M., and Series G at 420 R.P.M. are available in motor ratings from 1/20 to 5 H.P. Also available are special speeds, variable speeds, as well as air driven models.

TOP AND SIDE ENTERING

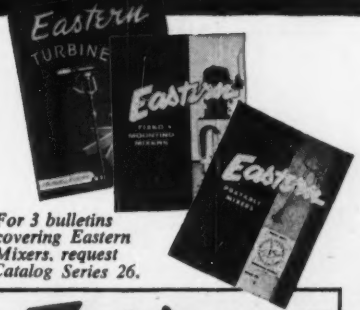
Series A, extra heavy duty for large tanks, are available in side entering units only within a range of 5-30 H.P. with standard speeds of 280, 420, and 1150 R.P.M.

Series C, for average tank capacities, are available in sizes of ¼ to 10 H.P. at these standard speeds: 1725 R.P.M. (up to 5 H.P.); 1140 R.P.M. (up to 10 H.P.); 420 R.P.M. (up to 7½ H.P.); 280 R.P.M. (up to 5 H.P.). Available in both horizontal and vertical models.

TURBINE MIXERS

Eastern's Top and Bottom Entering Turbine Mixers find particular application where liquid blending requires gentle, yet thorough agitation.

Models are available in sizes from ¼ to 40 H.P. Standard speeds are 56, 68, 84, 100, 125, 155 R.P.M.



For 3 bulletins covering Eastern Mixers, request Catalog Series 26.

Eastern
INDUSTRIES, INC.
Mixer Division
Regent St., Norwalk, Conn.

MISCELLANEOUS CHEMICAL PRODUCTS, continued

Bag, Sift-Proof

For fine mesh materials. (110A)

. . . Duo-Tite sift-proof bag is tailor-made for fine mesh, dry products hard to hold, and for poisonous powdered products that mustn't sift. Double-lined bag is heat-sealed at bottom, folded, treated with paste, folded again to glue to bag.—*Continental Can Co., New York 17, N. Y.*

Cable, Plastic

Made from Mylar. (110B)

. . . Mylar cable has unusual abrasion resistance, will safely handle much larger work loads than fiber ropes. Cable has high mechanical and impact strength, is impervious to water, resistant to chemicals and solvents, thermally stable from 70 F. to over 300 F. It may be spliced and cut by "hot knife" method. Cut ends heat seal, prevent raveling.—*Reynolds Industries, Cleveland, Ohio.*

Carbon Black

For polyethylene pipe. (110C)

. . . Higher loadings of carbon black increase the burst strength of polyethylene pipe. Aim is to develop enough additional strength to make pipe more competitive with steel.—*Acheson Dispersed Pigments Co., Philadelphia 34, Pa. and Godfrey L. Cabot, Inc., Boston 10, Mass.*

Carbon, Porous

Fine grain gives large surface area. (110D)

. . . Porous carbon is 75% air yet retains desirable carbon characteristics: high electrical conductivity, chemical resistance, stability at high temperatures. Its fine grain provides large surface area despite high porosity. Porous carbon offers engineering possibilities for impregnation or for use as filter plates. It's available in blocks and sheets up to 10 in. by 10 in. and in thicknesses to 1½ in.—*Stackpole Carbon Co., St. Marys, Pa.*

Catalyst, Alumina

Cuts stack losses, lasts longer. (110E)

. . . High alumina catalyst (for fluid cracking operations) contains 25 wt. % alumina. Chemical shows improved selectivity of end-product distribution, 15–25% higher equilibrium activity, greater stability of catalytic activity.—*American Cyanamid Co., New York 20, N. Y.*

Catalyst, Cracking

For petroleum refining. (110F)

. . . Three grades of Aerocat MS fluid cracking catalyst help petroleum refiners obtain higher efficiencies in these operations: low velocity with good catalyst recovery facilities; moderate to low velocity, average recovery; high velocity, limited recovery.—*American Cyanamid Co., New York 20, N. Y.*

Catalyst, Cracking

Low-density. (110G)

. . . Petroleum cracking catalyst combines attrition resistance with inherent advantages of higher stability of surface area, pore volume and catalytic activity under operating conditions.—*Davison Chemical Co., Baltimore 3, Md.*

Chelating Agent

Has highest sequestering power for heavy metal ions. (110H)

. . . Kalex G is a chelating agent claimed to have the highest sequestering power for ferric iron, nickel, cobalt and copper ions. In terms of grains of metal ion sequestered per gram of chelating agent used, Kalex G performs as follows: ferric iron (pH of 7), 0.90; ferric iron (pH of 11), 1.7; nickel, 0.44; copper, 0.52.—*Hart Products Corp., New York 18, N. Y.*

Chromyl Chloride

Oxidizing and chlorinating agent. (110I)

. . . Chromyl chloride, miscible with non-polar organic solvents, is available in 200 lb. drums, at 70¢ a lb. It acts both as an oxidizing and chlorinating agent. Functioning as an acid chloride, it hydrolyzes easily first to chromic acid and HCl, then to chlorine and chromic chloride. Because it's compatible with organic solvents it can be used to prepare trivalent chromium complexes soluble in both organic liquids and water. Solutions of chromic anhydride in chromyl chloride are vigorous oxidizing agents. In its present purified form (98% CrO_2Cl_2 with small amounts of Cl_2 and SO_2), chromyl chloride is stable when protected from light, can be stored with negligible corrosion in steel containers.—*Mutual Chemical Co. of America, Baltimore 31, Md.*

Clay, Montmorillonite

Absorbs variety of radioactive wastes. (110J)

. . . Extruded montmorillonite clay absorbs wide variety of high-level fission products, defies leaching and provides permanent disposal for rapidly accumulating radioactive wastes. This brightens outlook for the growth of a successful atomic power industry, which can't compete with conventionally generated electricity if it must bear the AEC's present waste disposal expenses—35¢ to $2 a gal. for tank storage and for monitoring of storage systems against leaks.—*Brookhaven National Laboratory, Upton, N. Y.*

PRUFCOAT SERVICE OFFERS YOU

3 BIG CORROSION CONTROL ADVANTAGES

Corrosion control in the chemical process industries is much more than just buying and applying protective coatings. And Prufcoat Laboratories, by combining the most advanced and effectively formulated protective coatings with **Prufcoat Service,** gives you **at no extra cost** the best possible assurance of **minimum corrosion losses** and **maximum dollar savings.** Here are the three important benefits of **Prufcoat Service.**

1 PRE-JOB servicing to help you analyze your corrosion problems, select the best coating systems for your needs and prepare pin-pointed recommendations. Special attention is paid throughout to the practical requirements and limitations of each individual plant situation.

2 ON-JOB servicing to see that application specifications are both understood and followed in the field, that proper care is given to surface preparation and coating application, that coating thickness requirements are met and that adequate inspection procedures are initiated.

3 POST-JOB servicing to assist in establishing the proper preventive maintenance procedures and good upkeep practices that can add so much to the long-term performance and dollar savings inherent in every correctly engineered protective coating job.

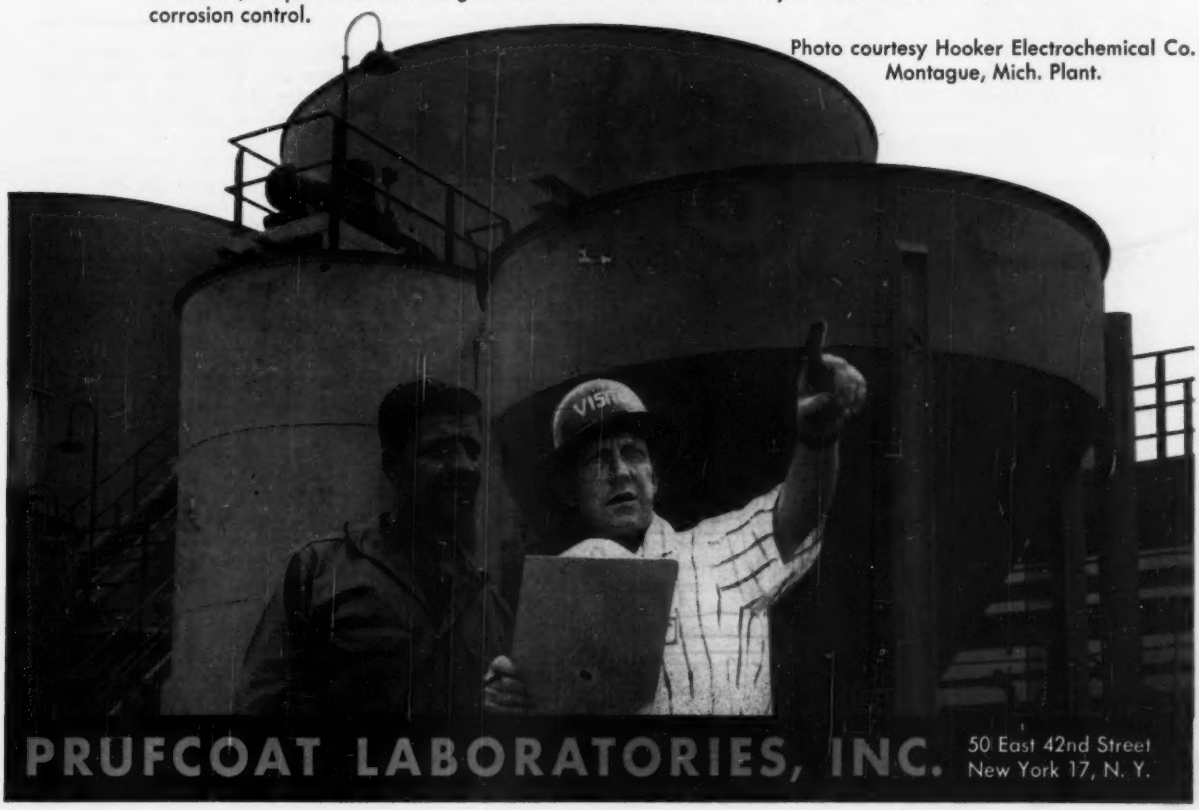
Backed by nearly two decades of practical corrosion control experience in the chemical industries and by continuous research devoted exclusively to chemical-resistant protective coatings, **Prufcoat Service** is provided by trained Prufcoat representatives in major industrial areas of the country.

Prufcoat Laboratories offers a complete line of protective coatings — vinyl, styrene, phenolic, epoxy, acrylic, oleoresinous, odorless and other specialty products.

Proven by use and recommended by users in hundreds of the nation's largest plants, the team of Prufcoat Products and **Prufcoat Service** can save you countless more maintenance dollars than just protective coatings alone.

MEET PRUFCOAT REPRESENTATIVE **DICK SHAFFNER** making one of his regular post-job servicing rounds at a large mid-west caustic and chlorine plant. Dick originally provided on-job Prufcoat application services during this plant's construction in 1953. By means of such services, Dick, like all Prufcoat representatives, helps his customers get the maximum return on every dollar invested in Prufcoat corrosion control.

Photo courtesy Hooker Electrochemical Co.
Montague, Mich. Plant.



PRUFCOAT LABORATORIES, INC. 50 East 42nd Street New York 17, N. Y.

MISCELLANEOUS CHEMICAL PRODUCTS, continued

Coagulant

Peps up solids separation. (112A)

. . . Separan 2610 is a flocculating agent for settling and filtering water-dispersed solids. Its benefits—in mining operations—include: higher filtration rates, greater coagulation, decreased material losses, effectiveness over wide pH range, better overhead clarity in settling operations, effectiveness in small doses, drier filter cakes.—*Dow Chemical Co., Midland, Mich.*

Coating, Glass Cloth

Silicone rubber imparts improved crease resistance. (112B)

. . . Improved grade of Silastic 132 silicone rubber coating for glass cloth features retention of dielectric strength and better crease resistance. 10 mil coatings on ECC116 heat-cleaned glass cloth hold their original average lengthwise tensile strength of 140 lb. per in. through 4 creases. Crosswise tensile strength averages 135 lb. per in., uncreased, and 130 lb. after 4 creases. Samples measured with ¼-in. electrodes have dielectric strength of 1,100 volts per mil. after 21 days at 200 C.—*Dow Corning Corp., Midland, Mich.*

Containers, Shipping

Carry up to 2,500 gal.; collapsed after use. (112C)

. . . Bulk shipping containers of rubber and fabrics are used to transport plastics such as polyethylene and polyvinyl chloride. Also used for carbon black, starch, clay, sugar. Exterior, as well as interior lining, is neoprene rubber. Packages—500 gal. and 2,500 gal. sizes—can be shipped, stored indoors or out, collapsed after use.—*U. S. Rubber Co., New York 20, N. Y.*

Drier, Natural Gas

Pre-attrited type silica gel. (112D)

. . . Natural gas is dehydrated to about 7 lb. of water per million cu. ft. to prevent hydrate formation which clogs lines, to decrease corrosion, to reduce power costs for compression. In more than a year of field testing, coarse, granular, pre-attrited silica gel has dried wet gas to an average dew point of less than −14 F.—*Davison Chemical Co., Baltimore 3, Md.*

Ferrocene

Promotes nearly smokeless combustion of organic materials. (112E)

. . . Ferrocene, bis(cyclopentadienyl) iron, can "clean up" smoke generating processes by increasing the efficiency of fuel combustion to smokeless products. When added to fuel oils, it enables normally fuming gun-type oil burners to yield substantially less soot. Ferrocene's stability, low toxicity and tendency to sublime and distribute uniformly in combustion zones suggest its use in jet aircraft fuels, in auto exhausts.—*E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del. and Hercules Powder Co., Inc., Wilmington 99, Del.*

Fiberglas, High-Density

Molded product has many industrial uses. (112F)

. . . Molding uncured fluffy Fiberglas wool together with thermosetting binder (under heat, pressure) creates shaped type glass with densities as high as 20 lb. per cu. ft., structural strength, resiliency. Material won't burn, rot, absorb moisture. Uses include insulation, gaskets, shipping cartons, filters, —*Owens-Corning Fiberglas Corp., Toledo 1, Ohio.*

Flocculation Aids

Speed floc growth, settling time. (113G)

. . . In industrial water treatment, addition of polymeric polyelectrolytes improves floc formation in a number of ways. Polyelectrolytes in small doses (1) increase rate of floc growth, (2) increase settling time by 4–10 times, (3) produce flocs with greater strength and resistance to redispersion by excessive turbulence.—*Cyrus Wm. Rice & Co., Pittsburgh 5, Pa.*

Flux, Ceramic Body

Alters firing temperatures. (112H)

. . . Vitromix ceramic body flux lowers firing temperatures of most ceramic bodies when used in small amounts. In large quantities it permits small products to be fired rapidly and continuously in conveyor belt furnaces or decorating kilns.—*Vitro Manufacturing Co., Pittsburgh 4, Pa.*

Graphite

High purity. (112I)

. . . Graphite with total ash content of 0.003% or less is available in diameters up to 2¾ in. and lengths up to 43 in. Uses: as crucibles and boats in final purification of germanium, as electric furnace heating elements having longer life at high temperatures.—*Stackpole Carbon Co., St. Marys, Pa.*

Infiltrase

Speeds course of drugs through tissues. (113A)

. . . Infiltrase, a mucous enzyme, hastens spreading—through tissues—of drugs and anesthetics administered subcutaneously or intramuscularly. Two results: quicker drug action and less local swelling and pain. Infiltrase hydrolyzes hyaluronic acid, the gel serving as "cement" in the ground substance of connective tissue.—*Armour Labs, Chicago 11, Ill.*

Insulation, High-Temperature

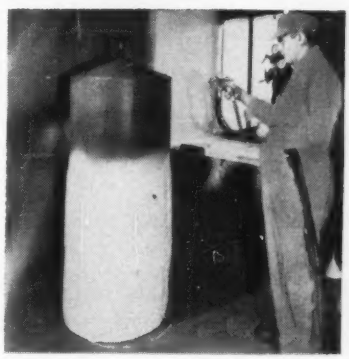
For process control. (113B)

. . . Two types of insulation for stepped-up processing are Fiberglas (effective to 900 F.) and Kaylo (hydrous calcium silicate, effective to 1,200 F.) pipe and block insulations. Photo shows workman putting finishing touches to Kaylo-insulated transfer line carrying 700 F. crude oil from furnace to fractionator. Both Fiberglas and Kaylo are used on refinery equipment—piping, stripping towers, desalting tanks—and in construction of atomic power plants. They'll go into two atomic steam plants at Kyger Creek, Ohio, and Clifty Creek, Ind., under the terms of what may be the largest insulation contract in the electrical industry's history.—*Owens-Corning Fiberglas Corp., Toledo 1, Ohio.*

Insulation, Spray-Foam

Covers irregular surfaces without fitting or fastening. (113C)

. . . Sprayed like paint, self-adherent to wet and dry surfaces, Poly-Cell foams in place within minutes to give a thick, shaped insulation. Cutting, fitting and fastening required with other insulation surfaces is avoided. Poly-Cell can be sprayed in exactly the amount needed. Manufacturer believes a vapor or weather barrier can be applied directly to sprayed insulation without an intervening supporting membrane and tack coat. Coverage: 1 gal. of Poly-Cell liquid mix when sprayed over 100 sq. ft. foams to a thickness of $\frac{3}{4}$-in.—*Insul-Mastic Corp. of America, Pittsburgh 22, Pa.*



Insulation, Wire

Gives long life protection at 300 F. (113D)

. . . Alkanex, thin-film enamel, provides adequate long-lasting protection to motors operating at 300 F. and higher. Low temperature advantage: allowable motor horsepower may be upgraded without increase in size. Alkanex-coated wire has essential qualities of a good motor wire insulation, i.e., toughness and abrasion resistance.—*General Electric Co., Pittsfield, Mass.*

Iodine, Diatomic

Has broad antibacterial spectrum. (113E)

. . . Diatomic iodine destroyed polio virus in one minute in recent vitro experiments. This and other work points to the diatomic form as being "capable of killing or inactivating most commonly observed disease-producing organisms."—*Philadelphia College of Pharmacy and Science, Philadelphia, Pa.*

Isotope, Aluminum

Radioactive. (113F)

. . . Long-lived radioactive aluminum isotope is available for tracer experiments. Last of the chemical elements to spawn a radioactive isotope, aluminum—its compounds, its fabrication—can now be better studied.—*Carnegie Institute of Technology, Pittsburgh 13, Pa.*

Musk, Synthetic

Not nitro or macrocyclic type. (113G)

. . . Versalide, a synthetic musk, is a cyclic ketone. It is derived from domestic, readily obtainable raw materials and is claimed superior to nitro musks and on a par with more expensive macrocyclic musks. Versalide, a perfume base, is completely stable, doesn't cause discoloration of soaps and cosmetics.—*Givaudan-Delawanna, Inc., New York 36, N. Y.*

MISCELLANEOUS CHEMICAL PRODUCTS, continued

Oil-Well Drilling Compound

Stabilizes mud, cuts drilling time. (114A)

. . . Filcon SPF, a high molecular weight phenol-formaldehyde resin, stabilizes viscosities and gel strengths of drilling muds. It cuts, by 10 days, drilling time required by other mud types for similar wells. And it helps achieve drilling rate of 180 ft. per day at mud cost of 90¢ per ft. SPF has a high tolerance for $CaSO_4$ and salt contaminates, is useful for piercing salt or anhydride sections.—*Monsanto Chemical Co., St. Louis 4, Mo.*

Ointment, Antibiotic

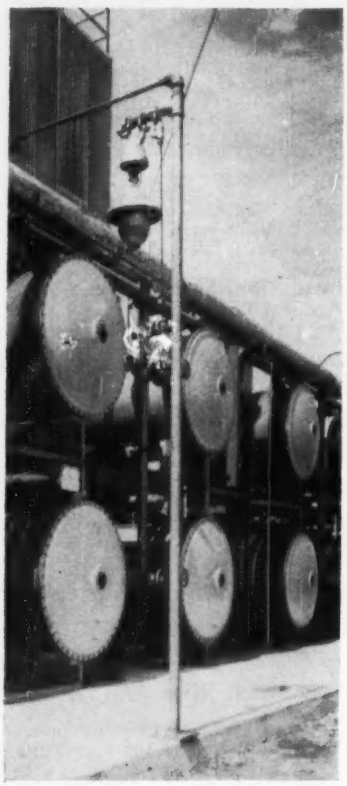
Hits dermatitis. (114B)

. . . Cortril Topical Ointment, terramycin-hydrocortisone formulation, attacks wide variety of skin ailments. Combination of drugs brings both inflammation (via hydrocortisone) and infection (via terramycin) under control at same time.—*Chas. Pfizer & Co., Inc., Brooklyn 6, N. Y.*

Ozone

Powerful, yet selective oxidant for processing problems. (114C)

. . . Ozone is not a low-cost chemical. Yet its total cost to you can't be reckoned without taking into account the sizable investment in generating equipment. Even for large ozone units of one-ton daily capacity operating on the most economical raw material, by-product oxygen, capital investment will run $100 per pound of daily ozone capacity. Small units running on air will cost $300 and more per pound of daily ozone capacity. But ozone's operating costs are a good deal lower—even allowing for depreciation—than some engineers think. Under favorable conditions and depreciating on a 10-year basis, ozone will cost between 5¢ and 10¢ per lb. In fact, on an equivalent oxidizing power basis and disregarding an allowance for return on investment, ozone will give any oxidant, save, perhaps, air and oxygen, a good run. It provides the chemical processor with a combination of properties that is unique among oxidants: selective, specific oxidation; oxidation at moderate temperatures and pressures; high oxidation potential; high purity; on-the-spot generation as used. Ozone is currently being used to oxidize oleic acid to azelaic and pelargonic acids and to selectively oxidize sterols. It is also used to clean up river water (removing taste and odor) and to destroy phenols in industrial wastes. Under certain conditions ozone will act as a catalyst or promoter for the reactions of ordinary oxygen, e.g., small quantities of ozone catalyze oxidation of aldehydes to acids in oxygen or air,



small amounts of ozone greatly enhance the air oxidation of SO_2 to SO_3 in the presence of manganese catalyst.—*Welsbach Corp., Philadelphia, Pa.*

Paperboard

Top-quality corrugating medium. (114D)

. . . Wheat straw, abundant annual crop fiber, is raw material used to produce a high-quality paperboard, Cor-U-Cel. Cor-U-Cel's crush resistance is 20% greater than any other corrugating medium regardless of fiber source. Manufacturer's cooking technique preserves high pentosan content of wheat straw (key to fiber's durability).—*Alton Box Board Co., Alton, Ill.*

Photo Process, Dry

Makes contact prints at exposure of a fraction of a second. (114E)

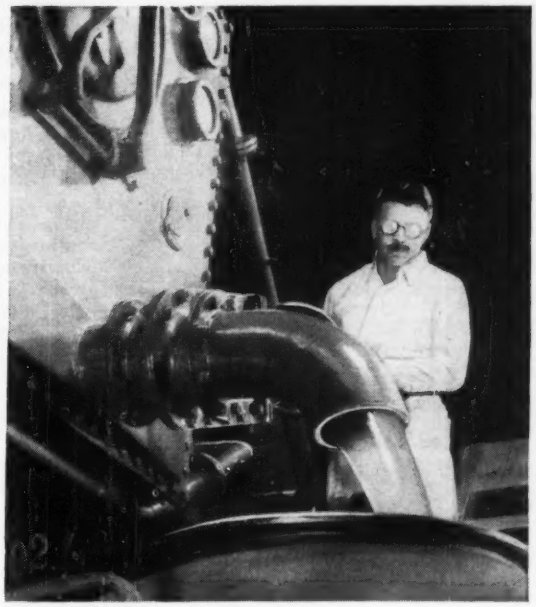
. . . Although as sensitive as standard photo contact printing paper, Electrofax paper costs no more than low-sensitivity papers. Speed with which images are photographed and printed—in a few seconds—with Electrofax paper and processing technique suggest two possibilities: mechanized system of continuous strip reproduction for use with electronic computers and like devices; practical, inexpensive production of master copies of diagrams, microfilm, letters, ect.—*Radio Corp. of America, New York 20, N.Y.*

Enjay assures you top product quality

IN SURFACE COATINGS *(Paint, Varnish and Lacquer)*

You can depend on Enjay for the quality ingredients that make your product a sales success. Enjay offers a complete line of petroleum chemicals to the surface coating, chemical and petroleum industries . . . backed by 35 years of research, know-how and proved results. Enjay is also ready to assist you in developing new or improved products through chemistry. Next time, call Enjay for *your* chemical needs.

IN PETROLEUM *(Lubricants and Gasoline Additives)*



IN CHEMICALS *(Plastics)*

PETROLEUM
PARANOX
PARATONE
PARAFLOW
PARAPOID
PARADYNE
PARATAC
PETROHOL
Methyl Ethyl Ketone
Dewaxing Aid
Ethyl Ether
Isopropyl Ether
Reference Fuels

RUBBER
ENJAY BUTYL
VISTANEX

SURFACE COATING
PETROHOL 91
PETROHOL 95
PETROHOL 99
JAYSOL
Secondary Butyl Alcohol
Secondary Butyl Acetate
Isopropyl Acetate
Acetone
Methyl Ethyl Ketone
Dicyclopentadiene
Ethyl Ether
Isopropyl Ether
Naphthenic Acids
Iso-Octyl Alcohol
Decyl Alcohol
Denatured Ethyl Alcohol

CHEMICAL
PETROHOL 91
PETROHOL 95
PETROHOL 99
JAYSOL
Iso-Octyl Alcohol
Decyl Alcohol
Denatured Ethyl Alcohol
Tridecyl Alcohol
Dicyclopentadiene
Isoprene
Butadiene
Ethyl Ether
Isopropyl Ether
Tetrapropylene
Tripropylene
Aromatic Tars
Benzene
Acetone
Methyl Ethyl Ketone

ENJAY

35 successful years of leadership in serving industry

Enjay Company, Inc.
15 West 51st Street, New York 19, N. Y.

MISCELLANEOUS CHEMICAL PRODUCTS, continued

Refractory, Carbide

Space and fuel saver. (116A)

. . . Thin silicon carbide refractory withstands 3,000 F. under load conditions without warping or cracking. It saves space and fuel because (1) thickness required to carry a load is reduced, thus affording greater setting area and (2) heat is more available to fire products rather than the supporting refractories. —*Electro Refractories Abrasives Corp., Buffalo, N. Y.*

Reserpine

For hypertension. (116B)

. . . Serfin, trade name for reserpine (alkaloid from Rauwolfia shrub), is used to treat cases of hypertension. Serfin has mild side reactions compared to other hypotensive agents.—*Parke, Davis & Co., Detroit 32, Mich.*

Rhenium

Availability increased. (116C)

. . . Ten to twenty thousand pounds of rhenium—to meet potential future demand—can be made available to industry. Though expensive, rhenium's properties may justify use in specialized electrical and electronic applications. It has second highest melting point of all metals (3,180 C.), high strength at all temperatures, ductile at low temperatures, excellent conducting oxide.—*Batelle Memorial Institute, Columbus 1, Ohio.*

Riboflavin, Soluble

For vitamin B_2 liquid formulations. (116D)

. . . Commercial production of a highly soluble form of riboflavin—riboflavin-5′-phosphate sodium—will broaden the market for vitamin B_2 formulations (parenteral and oral). Unlike ordinary ribo or solubilized ribo solutions, the new product easily forms, without solubilizers, stable solutions of 20–30 mg. per ml. (riboflavin equivalent) with no bitter taste. Potential: high blood levels of B_2 obtainable for first time (paranteral); higher concentrations of ribo with less trouble, cost as well as better taste (oral). Present price of 5′-phosphate—$140 a kilo or $200 a kilo on a straight riboflavin basis—is considerably higher than for USP ribo ($100 a kilo) or its metastable form ($130 a kilo). But extra premium is expected to be more than offset in parenteral and oral preparations by the advantages of high, unaided solubility; savings in expensive solubilizers and easier formulation.—*Hoffmann-La Roche, Inc., Nutley, N. J.*

Silica, Colloidal

Extreme fineness, high purity. (116E)

. . . Cab-o-sil, white and nearly chemically pure siliceous pigment, is prepared by vapor phase hydrolysis of a silicone compound in a hot gaseous system (1,100 C.). Low in water content (99.0-99.7% SiO_2) and very fine (0.015–0.020 microns), it performs well as an agent for reinforcing rubber, suspending, flatting, thickening and gelling, anticaking and as a transparent extender.—*Godfrey L. Cabot, Inc., Boston 10, Mass.*

For More Information . . .

For more information on any item, simply write its code number on one of the Reader Service postcards inside the back cover of this issue. Mail it and information comes to you from the manufacturer. You can also write directly to the producer at the address given. Or you can refer to the August 1954—July 1955 issues of CE by using the monthly index in the Chemicals & Raw Materials department or the annual index in December. For speed and convenience, use Reader Service postcards.

Westvaco® CHEMICALS

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FOOD MACHINERY AND CHEMICAL CORPORATION®

TRADE MARK

ALKALIS

CAUSTIC POTASH — 45% and 50% Liquid—Flake and Solid.

CAUSTIC SODA
Liquid 73%; Liquid 50%, Regular and Low-Chloride Grades.
Flake, Solid and Ground, 76% Na_2O

REFINED SODA ASH — Light (one grade) and Dense (two grades).

NATURAL SODIUM SESQUICARBONATE (SULTRON®)

NATURAL SODA ASH†—Light and Dense

SOLVENTS

CARBON BISULFIDE

CARBON TETRACHLORIDE—Technical and C.P. Grades

ETHYLENE DIBROMIDE

PERCHLORETHYLENE—Industrial and Dry Cleaning Grades.

OTHER CHEMICALS

BROMINE—Liquid.

CHLORAL†—Technical.

CHLORINE—Liquid.

DICHLOROACETALDEHYDE

FIRE EXTINGUISHER FLUID—(Carbon Tetrachloride Base).

GRAIN AND MILL FUMIGANTS†
Composition shown by volume.
No. 3—80% Carbon Tetrachloride, 20% Carbon Bisulfide.
No. 6—(Spot Fumigant No. 6)—60% Carbon Tetrachloride, 25% Ethylene Dichloride, 15% Ethylene Dibromide.
No. 8—65% Carbon Tetrachloride, 30% Ethylene Dichloride, 5% Ethylene Dibromide.
No. 9—80% Carbon Tetrachloride, 15% Carbon Bisulfide, 5% Ethylene Dibromide.
(Custom mixed Grain Fumigants and Solvent formulations available on request).

HYDROBROMIC ACID, 48%

HYDROGEN BROMIDE—Anhydrous.

KAM® (MODIFIED CAUSTIC SODA)
Solid and Flake.
Phosphated Caustic Soda; bottle washing compound.

MAGNESOL* BRAND MAGNESIUM SILICATE†
An active hydrated magnesium silicate, in the form of a fluffy white free-flowing powder—strongly adsorptive toward a variety of substances.

INDUSTRIAL GRADE — Regular and Powdered.
Highly useful as an adsorbent in many applications where troublesome colors, flavors and other impurities must be removed; also as a component in dentifrices, cosmetics and plastics; a conditioning (anti-caking) agent in dry mixtures and as a filler and curing agent for synthetic resins.

DRY CLEANING GRADE
Valuable as a combination adsorbent and filter aid for preventing buildup of undesirable impurities in dry cleaning solvent.

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DEVELOPMENT PRODUCTS

DICHLOROMALEIC ANHYDRIDE

DIMETHYL HYDRAZINE (unsymmetrical)

ETHANOL FORMAMIDE

ETHYLENE CHLOROBROMIDE

META-CHLOROANILINE

TOLYLENE DI-ISOCYANATE

TRICHLORONITROPROPANOL

†Additional Literature Available on Request.
*MAGNESOL is the registered trade mark of Food Machinery and Chemical Corporation for its brand of magnesium silicate adsorptive powder, made by patented processes.

PHOSPHATES

DIPOTASSIUM PHOSPHATE (DKP), ANHYDROUS—Powder or Unground.

DISODIUM PHOSPHATE (DSP), ANHYDROUS
Powder or Granules. Food and Commercial Grades.

FERROPHOSPHORUS

HEXAPHOS AND FOSFODRIL®*†
Adjusted and unadjusted grades, five physical forms.

MONOPOTASSIUM PHOSPHATE (MKP), ANHYDROUS
Tetragonal Crystals.

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Powder or Granules. Food and Commercial Grades.

PHOSPHATE SLAG

PHOSPHORIC ACID
75% and 80% — Food and Commercial Grades.
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Granular and Powder. Food, Doughnut and Technical Grades.

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Powder or Granules.

TETRAPOTASSIUM PYROPHOSPHATE (TKPP),† ANHYDROUS — Powder.

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Powder or Granules and Crystals.

TRIPOTASSIUM PHOSPHATE (TKP)—Granules.

TRISODIUM PHOSPHATE (TSP),† ANHYDROUS — Powder and Granules.

TRISODIUM PHOSPHATE (TSP), MONOHYDRATE—Granular.

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Baking Powders and Creams based upon sodium acid pyrophosphate.

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MAGNESIAS

ADSORPTIVE GRADES—2642 (Powder).

SEA SORB® 43†—Technical Grade Adsorbent, Powder.

SEA SORB® 53†—Technical Grade Adsorbent, Granular.

CHEMICAL GRADES — 2661 (Powder, Granules); 2663 and 2665 (Powder).

DEVELOPMENTAL GRADES:
P-96, Refractory; Catalyst Carriers; Heat Exchange Pebbles.

ELECTRICAL FUSION GRADE

RUBBER GRADE—HEAVY

INSULATION GRADE

RAYON GRADE

OXYCHLORIDE CEMENT GRADE:—2664; 2667.

AGRICULTURAL GRADE, S.M.O.

REFRACTORY GRADE—PERICLASE—Three Regular Grades.

PERICLASE SAND—A loose conductive filler for industrial electrical heaters.

MAGNESIUM CHLORIDE—Liquid and Flake*.

MAGNESITE—Crude Magnesium Carbonate.
Additional information on SEA SORB® and Developmental Grades is available from the Market Development Dept.

BARIUM PRODUCTS

BARIUM CARBONATE*—Powder.

BARIUM OCTAHYDRATE
Crystals—Technical and Optical Grades; Flake—Technical Grade.

BARIUM PENTAHYDRATE—Flake—Technical Grade.

BARIUM NITRATE — Government Specification or Technical Crystals.

BARIUM OXIDE, TECHNICAL—Granular or Powder.

BARIUM PEROXIDE—Powder.

BARYTES, GROUND*—Powder.

BLACK ASH (Barium Sulfide)*—Powder.

BLANC FIXE (Barium Sulfate)*—Powder.

OTHER CHEMICALS

ALUMINUM CHLORIDE ANHYDROUS†
Sublimed, Technical and Resublimed Grades.

DOLOMITE*

ETHYLENE DIBROMIDE

GYPSUM—Cement, Agricultural and Chemical Grades.

METHYL BROMIDE*

PHOSPHOROUS OXYCHLORIDE†

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SODIUM SULFIDE 60-62%—Flake and Solid Grades†

SODIUM POLYSULFIDE

SOIL FUMIGANTS

STRONTIUM HYDROXIDE—Octahydrate Crystals—Technical†

DEVELOPMENT PRODUCTS

DIBUTYL PHOSPHITE†

TRISCHLOROETHYL PHOSPHITE†

*Westvaco's brand of glassy phosphates.
†Additional Literature Available on Request.
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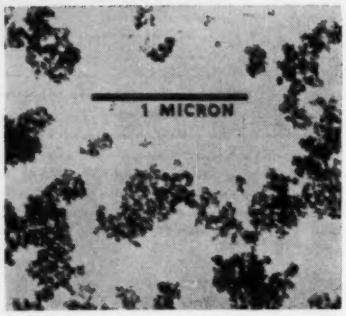
MISCELLANEOUS CHEMICAL PRODUCTS, continued

Silica, Super-Fine

Low particle size makes for huge surface area. (118A)

. . . Silica with a higher degree of particle separation (10–20 millimicrons) and purity (99%) than that formed by precipitation methods is now made semi-commercially. Material has prodigious surface area and oil absorption capacity, is easily dispersed in elastomers and in solvent, oil or water-based systems. Uses include reinforcing filler for rubber and plastics, extender and flatting agent for protective coatings, lubricant thickener and textile finishing additive.—*Dow Corning Corp., Midland, Mich.*



Sodium Hydride-In-Oil

More effective in reactions. (118B)

. . . Oil dispersion of NaH is more effective than dry NaH because of its particle size (5–50μ) and because oil coating prevents surface oxidation of NaH crystals. Dispersion sparks usually slow reactions, often with higher yields—at lower temperatures. Oil coating makes for easier, safer handling; dusting is eliminated, fire hazards minimized. Ready-made dispersion can be poured in air, pumped, metered.—*Metal Hydrides, Inc., Beverly, Mass.*

Storage, Fireproof

Insulation withstands open 1,600 F. flame test. (118C)

. . . Though calculated specifically for liquefied propane storage, test results show that compounded fireproofing insulation can be used for tanks holding other flammables. Coating's composition: $\frac{1}{16}$-in. base coat of corrosion- resistant palladium Type T or T2 Mastic; $1\frac{1}{8}$-in (minimum) layer, next, of asbestos and ceramic material supported by wire mesh; finally, $\frac{1}{8}$-in. coat of weather-resistant palladium Type T or T2, with or without optional glass fiber membrane.—*Emjay Maintenance Engineers, Rutherford, N. J.*

Vermiculite

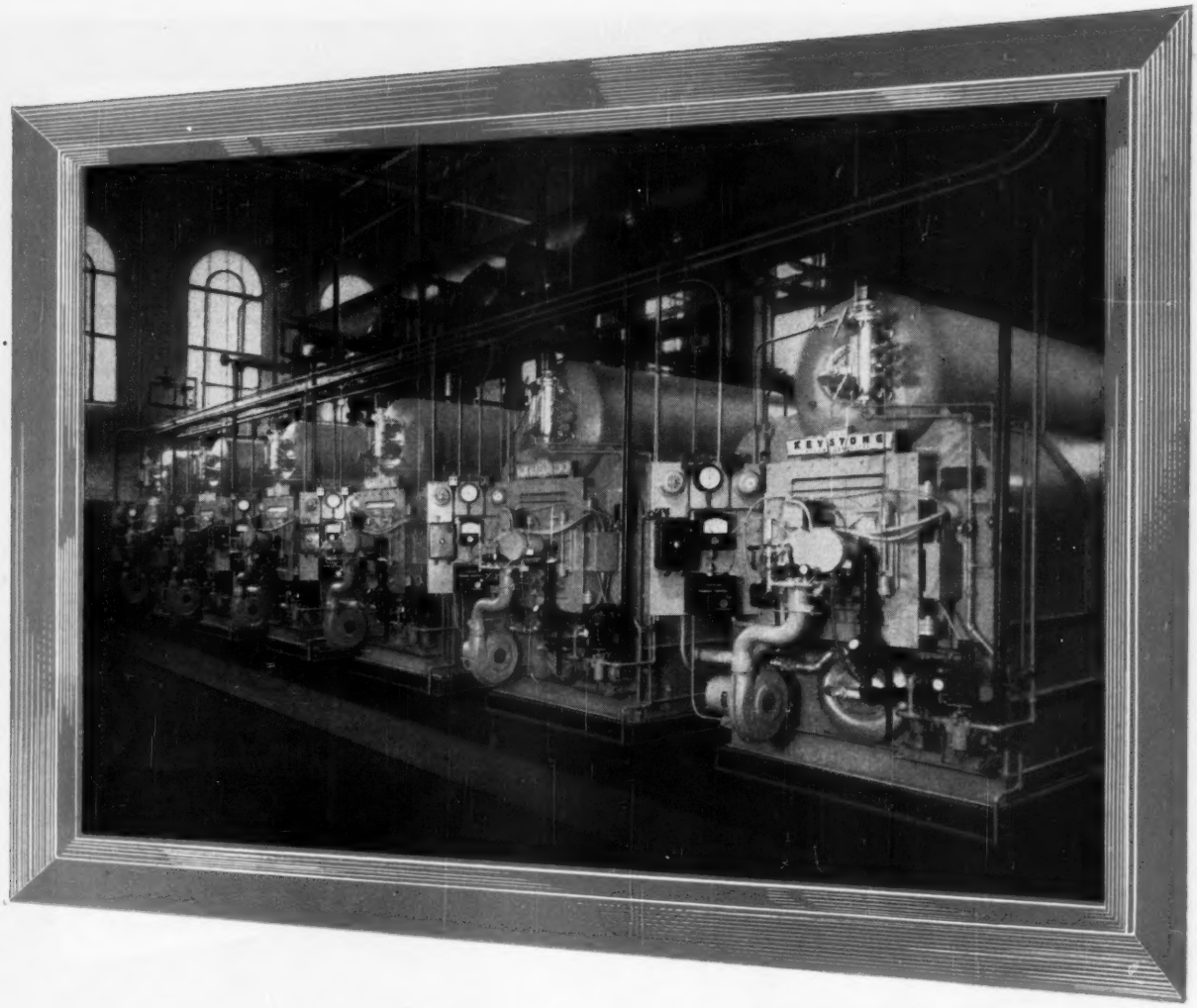
Popcorn-like mineral finds new uses. (118D)

. . . Vermiculite, well-esteemed building material, is today doing many jobs for the chemical process industries. Estimates rate the industrial market, including CPI consumption, at 10% of total vermiculite production or 40 million lb. per yr. Future sales to the chemical industry alone may rise to 15% of total vermiculite market within the next 5 years. Vermiculite is a hydrated magnesium-aluminum-iron silicate, close relative of mica. At Libby, Mont. and Travelers Rest, S. C.—country's main deposits—crude ore is strip mined, rid of coarse impurities by screening, milled, washed, dried and graded. In processing plants, furnace heat blasts water out of the ore particles, expanding them to more than 12 times their original volume. Puffed or processed vermiculite contains tiny air bubbles, has a cellular structure and enormous surface area with unusual insulating (low K factor) and fireproofing properties, resiliency and prodigious capacity for holding or "carrying" liquids and solids. Because of these properties, vermiculite can be used as a carrier, soil conditioner, process equipment insulation, packaging agent, catalyst, filler and lubricant.—*Zonolite Co., Chicago, Ill.*

Wax, Microcrystalline

Carnauba sub. (118E)

. . . Petroleum-derived Polymekon Wax can form films, is recommended as an additive in manufacture of waxed paper and containers, varnishes, rubber compounds, printing inks.—*Sun Chemical Corp., Long Island City, N. Y.*



There's Steam Economy in FLEXIBILITY

Above, six Erie City Keystones meet a variable heating and processing steam load at the Ohio Masonic Home in Springfield, Ohio

JOSEPH BRESLOVE
& ASSOCIATES
CONSULTING ENGINEERS
CLEVELAND, OHIO

Picture the boiler operating advantages of multiple Erie City Keystone Steam Generators in your plant. Multiple "Keystones" permit high efficiency operation. During periods of low loads, take one or more units off the line—for high loads, the rapid steaming "Keystones" respond quickly to increased requirements.

Compact, completely factory assembled and Factory Fire Tested "Keystones" fit into any plant's variable steam needs.

There is nothing to assemble in the field.

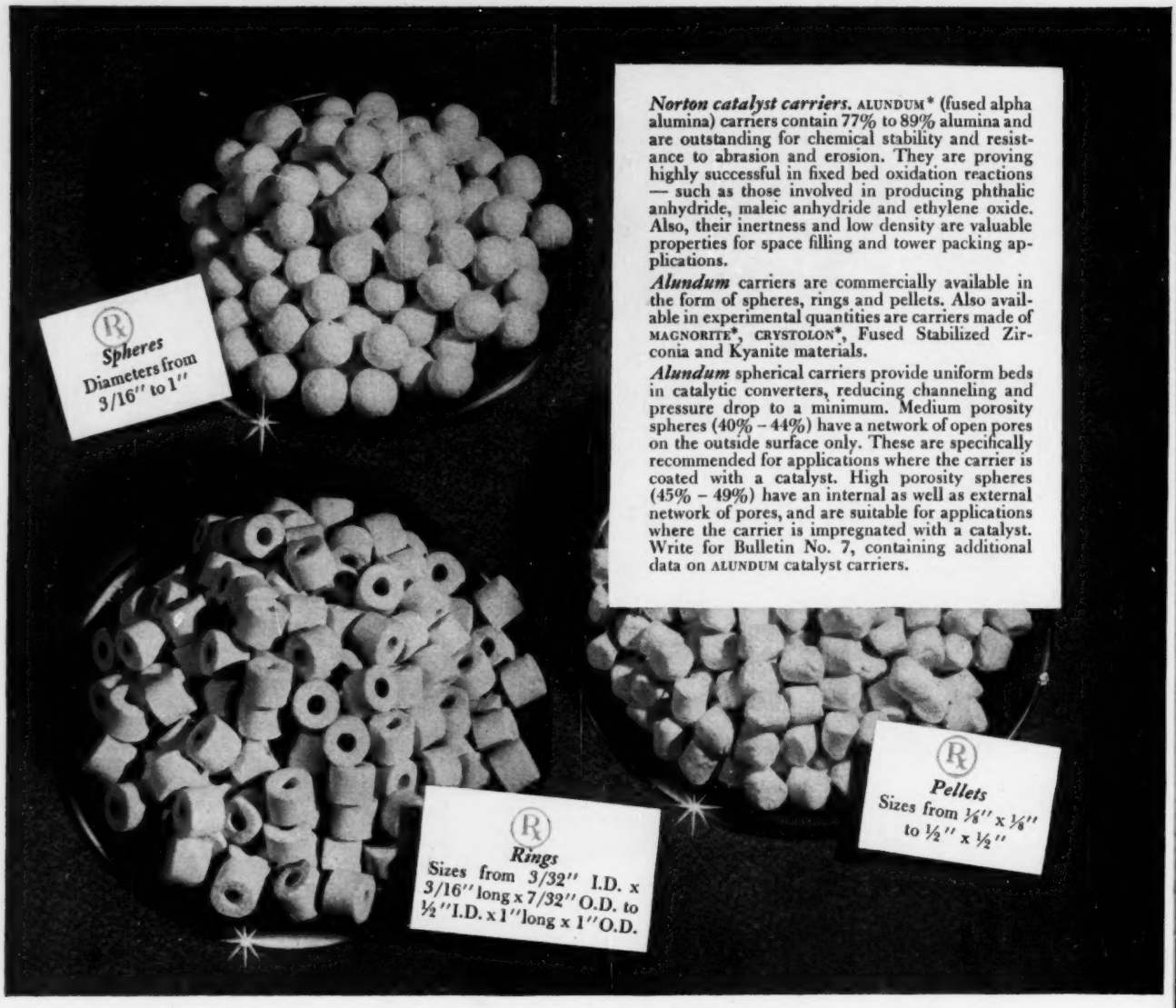
Need steam at some remote plant location indoors or outdoors? Investigate the use of one or more "Keystones." Bulletin SB-51 describes the fully automatically controlled Keystone.

ERIE CITY
115 Years in Steam Generation

You can depend on Erie City for sound engineering

ERIE CITY IRON WORKS • *Erie, Pa.*

STEAM GENERATORS • SUPERHEATERS • ECONOMIZERS • AIR PREHEATERS
UNDERFEED AND SPREADER STOKERS • PULVERIZERS



Norton catalyst carriers. ALUNDUM* (fused alpha alumina) carriers contain 77% to 89% alumina and are outstanding for chemical stability and resistance to abrasion and erosion. They are proving highly successful in fixed bed oxidation reactions — such as those involved in producing phthalic anhydride, maleic anhydride and ethylene oxide. Also, their inertness and low density are valuable properties for space filling and tower packing applications.

Alundum carriers are commercially available in the form of spheres, rings and pellets. Also available in experimental quantities are carriers made of MAGNORITE*, CRYSTOLON*, Fused Stabilized Zirconia and Kyanite materials.

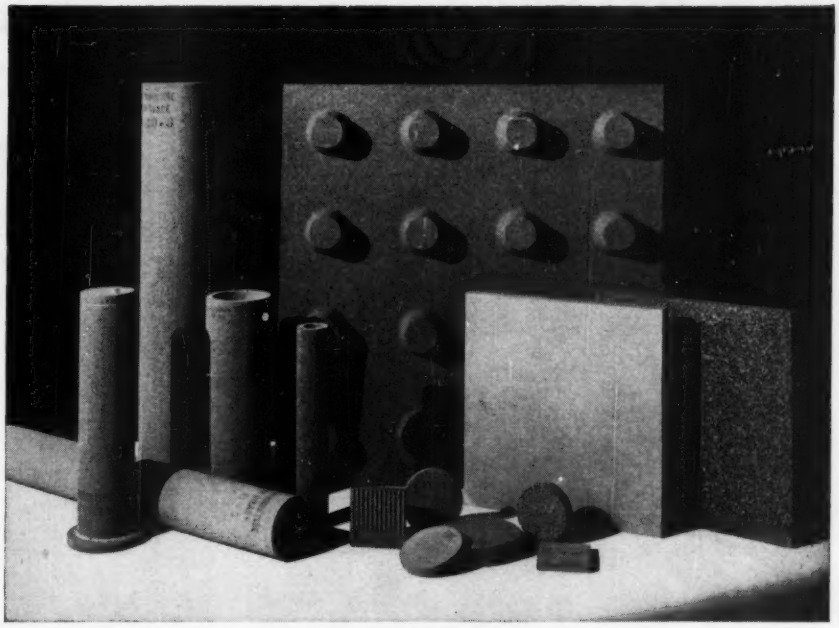
Alundum spherical carriers provide uniform beds in catalytic converters, reducing channeling and pressure drop to a minimum. Medium porosity spheres (40% – 44%) have a network of open pores on the outside surface only. These are specifically recommended for applications where the carrier is coated with a catalyst. High porosity spheres (45% – 49%) have an internal as well as external network of pores, and are suitable for applications where the carrier is impregnated with a catalyst. Write for Bulletin No. 7, containing additional data on ALUNDUM catalyst carriers.

Rx for more profitable processing

Norton engineered and prescribed refractories are proved aids to better, lower cost production

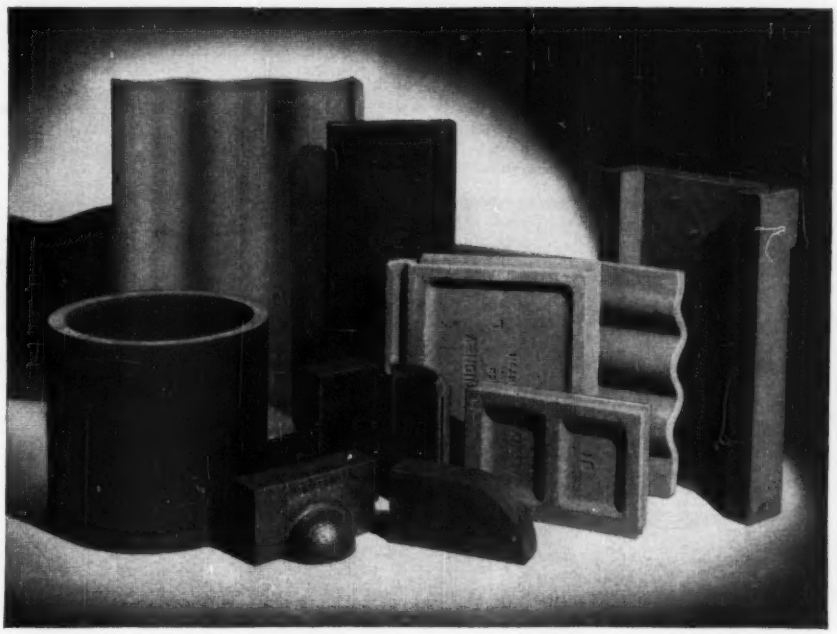
Backed by over 50 years of experience in electrochemical refining, Norton produces refractories whose purity and properties are carefully controlled and consistently duplicated. These refractories are *engineered and prescribed* to give you the best possible Rx — the most effective combination of physical characteristics, plus thermal, chemical and electrical properties — for your particular applications.

Chemical engineers are finding these Rx's of immense practical value in widely varying processes. Whatever your own processes may be, it will pay you to learn more about the many advantages of Norton refractories. Just a few products in this complete, top-quality line are described here. For complete details, and expert technical aid, call in your Norton Refractories Engineer. Meanwhile, write direct for the illustrated bulletins, mentioned in this advertisement, that cover your requirements. NORTON COMPANY, 504 New Bond Street, Worcester 6, Mass. *Canadian Representative:* A. P. Green Fire Brick Co., Ltd., Toronto, Can.



Norton porous mediums come in plates, tubes, discs and diaphragms, engineered to fit your filtering, diffusing or aerating requirements. All have uniform porosity, in the size and open-pore ratio you need. Made of ALUNDUM material that is chemically stable and strong, their resistance both to acid and alkaline conditions gives them extra long life. Norton seamless porous tubes have the advantage, unusual in tubes, of uniform porosity over their entire area — permitting constant air or liquid pressure and enabling uniform backwashing to do more thorough cleaning.

Typical applications are filtering water or solvents; cutting oils, wine and other liquids; reclaiming cleaning fluids; handling industrial oil wastes; chlorination, carbonation and other gas diffusion applications. Bulletin No. 140 tells you more about Norton ALUNDUM porous mediums.



Norton refractory shapes for reaction furnaces come in bricks, plates, tubes and blocks, made of ALUNDUM, CRYSTOLON, MAGNORITE and Fused Stabilized Zirconia refractory materials. The development of Fused Stabilized Zirconia is a typical example of how Norton aids you in utilizing higher temperatures for greater efficiency and output. Norton was the first to bring this valuable material out of the experimental stage into commercial production. Now it is used in many processes.

No other refractory is so chemically stable at such high temperatures under both oxidizing and reducing conditions. In gas synthetic processes, furnaces lined with it have withstood temperatures approaching 4700°F for long periods. Its low thermal conductivity (6.2 BTU in dense shapes at 2000°F) and its high electrical conductivity at high heat are other important properties, all of which are described in Bulletin No. 1741.

Norton electric furnace shapes and laboratory ware

Norton electric furnace refractories — cores, tubes and muffles — are made of ALUNDUM or CRYSTOLON materials. ALUNDUM shapes, composed of 99% pure fused alumina, are characterized by great stability, chemical inertness, excellent thermal conductivity and good electrical insulation qualities. CRYSTOLON shapes, for use under more limited conditions, combine high thermal conductivity with resistance to heat shock. Bulletin No. 458 tells how to construct electrical furnaces for the laboratory.

Norton ALUNDUM laboratory ware, available at your laboratory supply house, offers many properties important to development, experimental or analytical work. It is chemically stable, stands temperatures up to 1900°C and is easy to clean. For filtering, it comes in four degrees of permeability. Bulletin No. 793 gives you the whole story.

NORTON

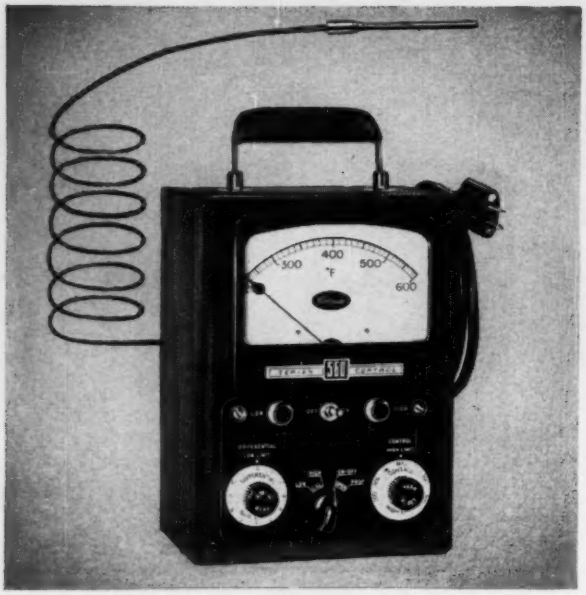
REFRACTORIES

Engineered . . . Rx . . . Prescribed

Making better products . . . to make your products better

*Trade-Marks Reg. U. S. Pat. Off. and Foreign Countries

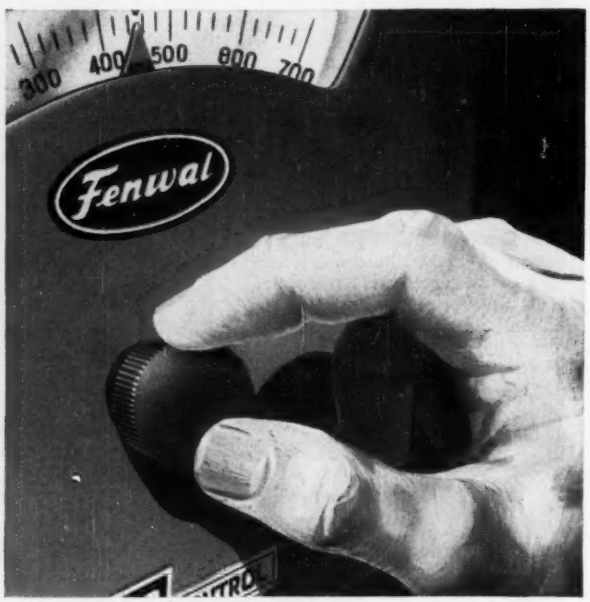
Which of these two instruments provides the temperature control accuracy you need?



1. IT'S ELECTRONIC! The new Series 560 applies the thermistor principle in temperature indicator controls with heretofore unattainable accuracy over a scale range of 200° to 600°F. It's the *only* instrument that provides the three major control modes — (1) on-off (2) proportional (3) adjustable differential — all at the flip of a switch. Wide range of use for general laboratory, processing, molding or packaging applications.

2. IT'S MECHANICAL! The new Series 540 indicating controller combines low cost with high accuracy over a temperature range of 100° to 700°F. Temperature changes are transmitted by a bulb and bellows to an indicator control. Instrument features on-off control . . . adjustable differential . . . ambient compensation. May be flush or surface mounted. Capacity of 15 amps at 115 volts.

3. SIMPLICITY ITSELF is secret of Fenwal's Series 560 — accuracy, sensitivity and ruggedness. The thermistor's high resistance change permits operation with any length of lead wire up to 200 feet without affecting signal strength or accuracy. Thermistor is hermetically sealed in glass for stability; encased in stainless steel for ruggedness. No complex circuitry; maintenance is easy.



4. EASY "SET" AND "CHECK" OPERATION is a feature of Fenwal's Series 540 which is accurate to within 2% over the 100° to 700°F range, including the effects of ambient temperatures. Send for FREE NEW BULLETINS, MC122 on the Series 540, MC123 on the Series 560. Both contain full data you should have. Write to **Fenwal Incorporated, 1610 Pleasant St., Ashland, Mass.**

Fenwal Controls Temperature... *Precisely*

1955 INVENTORY

NEW...

Plants 7
Processes . . 33
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This Section ▶

366 items . . . CE's exclusive inventory of what's new in equipment . . . the year's most important developments . . . screened for their value to chemical engineers . . . pertinent facts only.

THIS is CE's second annual inventory of major new developments in equipment for the chemical process industries. It includes 366 new or newsworthy items carefully screened and selected by CE editors for publication in the issues of August 1954—July 1955. It stresses equipment that can be used in commercial or large-scale processing units. For more information on any item, write its code number on one of the Reader Service postcards, then mail to us.

1955 INVENTORY

New Equipment and Accessories

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• Electrical Equipment

Assemblies, Electrical

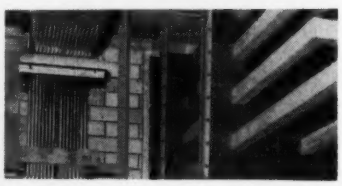
Factory fabricated. (124A)

. . . Jumpers, leads and lug assemblies are being factory fabricated for improved electrical performance. They are custom made to meet exacting specifications. Connections using assemblies have current-carrying capacity equal to conductors. Power loss from deteriorating connections is eliminated. Assemblies won't corrode.—*Erico Products, Inc., Cleveland 3, Ohio.*

Bar, Bus

Aluminum. (124B)

. . . Two types of aluminum electrical conductors have been installed in electrolytic chlorine plant (Solvay Process Div., Allied Chemical and Dye Corp.). Rectangular bars are ½ by 10 in.; hollow, square, tubular bars are ¾ by 4 in.—*Aluminum Co. of America, Pittsburgh 19, Pa.*



Battery, Solar

Converts sun's rays to useful power. (124C)

. . . Solar battery is short cut for getting electricity that bypasses chemical, hydro or steam conversions. It's first device to convert solar energy into useful electricity. Operating at 6% efficiency, battery compares favorably with efficiency of steam and gasoline engines. Though still in experimental stages, battery already produces power at rate of 50 w. per sq. yd. of surface. Wafer-thin strips of silicon (with minute amounts of impurities) convert light to electricity. Impurities make a "p-n junction" similar to that in germanium transistor.—*Bell Telephone Laboratories, New York 14, N. Y.*

Battery, Truck

Gives more power in same space as predecessor. (124D)

. . . New MC nickel-iron battery for lift trucks fits into same space but gives 25% more power than previous model. It can be charged at its normal rate or at an average of its normal rate throughout. It has no finish-rate limitations and no discharge limits, is not injured by accidents.—*Edison Storage Battery Div., Thomas A. Edison, Inc., West Orange, N. J.*

Breaker, Circuit

Saves cost and space on many jobs. (125A)

. . . 400-amp.-frame molded-case circuit breaker bridges the gap between a 225-amp.-frame breaker and 600-amp. model. It will take over duties previously handled by larger, more expensive 600-amp. breaker on circuits carrying 225 to 400 amp. It can be used in panelboards, switchboards, motor controls, bus duct plugs.—*I-T-E Circuit Breaker Co., Philadelphia 30, Pa.*

Conduit, Electrical

Has long life under corrosive conditions. (125B)

. . . Superduct, a heavy-duty, rigid, electrical conduit, has long life under severely corrosive atmospheric conditions. It's galvanized by the Sherardizing process, a method giving uniform zinc coating and positive bonding. Then it's coated inside and out with a vinyl chloride copolymer enamel that's pigmented and plasticized.—*National Electric Products Corp., Pittsburgh, Pa.*

Enclosure, Breaker

Assures dependable operation in dusty atmosphere. (125C)

. . . Patterned after Joint Industrial Conference requirements, circuit-breaker enclosure protects against lint, dirt, sawdust. Mounting holes and knockouts are omitted. External feet simplify mounting. Operating mechanism is located outside the enclosure. Neoprene gasket seals cover shut.—*I-T-E Circuit Breaker Co., Philadelphia 30, Pa.*

Fuses, Silver-Plated

Overcome fuse heating problems. (125D)

. . . Shawmut fuses now have all contacts silver plated. Formation of nonconducting copper oxide is thus prevented, eliminating heating problems commonly encountered. If silver-plated fuses are used with unplated holders copper oxidation is reduced 90%; when both fuse and fuse holders are silver-plated, 100% protection is claimed. S–P silver-plated fuses reduce power loss and maintenance.—*Chase-Shawmut Co., Newburyport, Mass.*

Insulation, Silicone Rubber

Extends open-motor usage. (125E)

. . . Silco-Flex, silicone rubber insulation, is expected to permit wider use of semi-protected and open-type motor frames in chemical and process industries. Now available on large equipment, it combines outstanding moisture resistance with flexibility and resilience similar to organic rubber. First all-silicone-rubber insulation system for large motors and generators protects stator for a 2,500-hp., 2,300-v., 3,580-rpm. induction motor under extreme moisture conditions. — *Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.*

Inter-Com, Spark-proof

Carries calls between hazardous and other plant areas. (125F)

. . . Explosion-proof inter-com stations can be installed where presence of either flammable vapors or combustible dusts prevent use of ordinary equipment. Units consists of "talk-listen" switch and three "call-origination" switches. Latter establish communication through trumpet speaker to any of three points outside of hazardous area. —*Executone, Inc., New York, N. Y.*

Light, Tank

Spark-proof. (125G)

. . . Explosion-proof pendant tank light, type EV 2375 assists processing of flammable chemicals. Equipped with type R 75-w., 120-v. spot lamp and suspended over tank porthole, fixture illuminates liquid surface inside. Operator can observe easily exact state of mixture. Threaded joints of fixture are completely flame tight.—*Crouse-Hinds Co., Syracuse, N. Y.*

Lighting System

For areas where hydrogen or acetylene are present. (125H)

. . . For chemical or refining processes using hydrogen or acetylene there is a lighting system: the first complete system for Class I, Groups A and B. Individual units in system are similar in size and appearance to explosion-proof fittings for fixtures for Class I, Groups C and D. System includes UL-approved components: 150 and 200-w. EVA 295 pendant lighting fixtures, EAB junction boxes, FSPC tumbler switches, EYS seals, UNY unions, EC series flexible couplings, fixture hanger supports.—*Crouse-Hinds Co., Syracuse, N. Y.*

Motor, Chemical

Corrosion-proof. (125I)

. . . Chemical motor, designated types SD and SE, is totally enclosed and protected from damaging corrosive atmospheres. It's produced in ratings from 3 to 150 hp.—*U. S. Electrical Motors, Inc., Los Angeles 54, Calif.*

Motor, D. C.

Accelerates faster, gives more torque in less time. (125J)

. . . Super T line of d.c. electric motors has faster, more accurate response to control than ever offered in standard-design motor. Acceleration to full speed is twice as fast as was previously possible—due to lower mechanical and electrical inertia, increased commutating ability. Motors have Dynamic Response —controlled reaction to demand for a change; dynamic to control heavy loads rapidly, yet gentle to give finely controlled power to extreme accuracy.—*Reliance Electric & Engineering Co., Cleveland 10, Ohio.*

ELECTRICAL EQUIPMENT, continued

Motor, Enclosed

Gives wound-rotor service in hazardous atmospheres. (126A)

. . . Enclosed motor can be run at low starting current, high starting torque, smooth acceleration, jogging or variable adjustable speed in moist, dirty, corrosive atmospheres. It's believed to be the first rib-type, enclosed, fan-cooled wound-rotor motor to be made with slip rings, brushing rigging, rotor and stator all mounted inside a single-frame enclosure. Two large pipe plugs can be removed from frame's upper quadrant to provide two large openings for maintenance work and adjustment of brushes and brush rigging. These motors are built on NEMA frames with standardized mounting dimensions.—*Allis-Chalmers Mfg. Co., General Machinery Div., Milwaukee 1, Wis.*

Motor, Gas-Filled

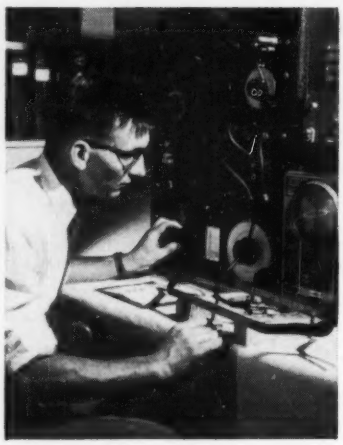
7,700 lb. rotor, powers compressor. (126B)

. . . Inert gas-filled motor, believed to be world's most powerful, drives centrifugal gas compressor on catalytic cracking unit (Sohio, Cleveland, Ohio). Motor replaces eight reciprocating engines; is expected to eliminate excessive building vibration, reduce maintenance, increase production, improve safety.—*General Electric Co., Schenectady 5, N. Y.*

Motors, Electric

Have new insulating materials that improve performance. (126C)

. . . Two insulating developments, Alkanex and Polyex, boost motor performance. Alkanex, thin-film, heat-resistant wire insulation, will raise the limiting temperature for long motor life from 220 F. to at least 300 F. Using insulated wire, motor horsepower can be increased without increasing motor size. Motors once rated at 20 hp. may be upgraded to 25 hp. or more. Homogeneous Polyex coil insulation is a combination of Dacron tape, Mylar polyester films and a synthetic hydrocarbon resin. It has 50% longer life than conventional systems, 50% greater dielectric strength, 600% more mechanical strength. Because it's tighter and more homogeneous than other systems, it tests lower for coil power factor.—*General Electric Co., Schenectady 5, N. Y.*



Motors, Low-Speed

Produce rotary motion in sealed pressurized system. (126D)

. . . Two motors, developed for nuclear power, produce low speed rotary motion that's variable in speed and direction, has positive torque and accurate positioning ability at zero speed. They can operate immersed in high temperature fluid at 2,000 psi., can produce torque of 8 lb.-ft. with speed of zero to 50 rpm. —*Westinghouse Electric Corp., Pittsburgh, Pa.*

Outlet, Power

Has interlocked safety switch. (126E)

. . . Accidental shutoff of circuit power is avoided on Rowan type 620-A3GX outlet by mechanically interlocking switch handle and plug. Plug can't be inserted or removed while switch is on. Oil immersion of parts prevents freezing due to corrosion.—*Crouse-Hinds Co., Syracuse, N. Y.*

Rectifiers

Convert a.c. to d.c. (126F)

. . . Tiny wafer-thin germanium rectifiers are used to convert a.c. to d.c. at high amperage and comparatively low voltage. They are about the size of a dime, highly efficient, stable, have high inverse voltage rating and very small reverse current.—*General Electric Co., Schenectady 5, N. Y.*

Starters

For corrosive and hazardous atmospheres. (126G)

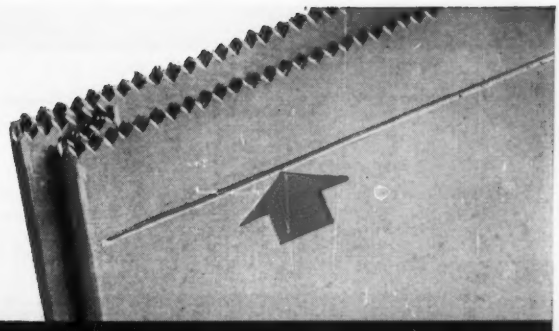
. . . For maximum protection against explosion and corrosion, line of Class 1 Group D motor starters has all connections, terminals, arcing parts, main line disconnect switches immersed in oil. Over-all short circuit protection is provided for 2,200–5,000-v. motors. Actual rating is 50,000 kva. interrupting capacity.—*Electric Controller & Mfg. Co., Cleveland 4, Ohio.*

Telephone, Portable

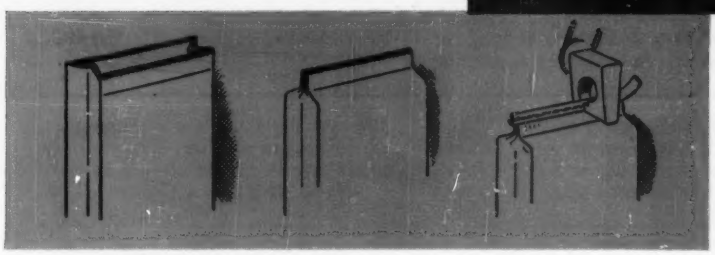
Powered by voice. (126H)

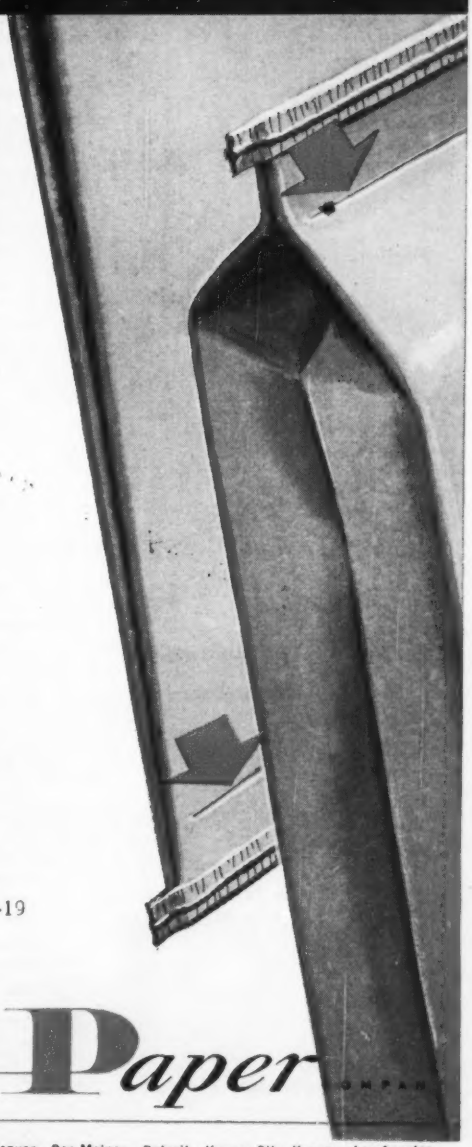
. . . Portable telephone unit depends only on the voice for power, is ready for instantaneous service at any time. Complete Communipak package includes a lightweight, heavy-duty cable reel holding 250 ft. of cable and two sound-powered telephone handsets.—*Wheeler Insulated Wire Co., Waterbury, Conn.*

Our pioneering pays off in profits for you



BAGPAK — **PREFORM** **MULTIWALLS**





It's the Crease that does it!

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Bagpak, the first to introduce multiwall bags to many industries, then improved them with the PREFORM top for easier, time-saving uniform closing. Now the PREFORM feature at the bottom means easier opening for faster, more complete filling.

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• Feeders and Mixers

Blender, Dry

For dry or semi-wet materials. (128A)

. . . Rotary mixer for dry or semi-wet materials features a sealed mixing unit with a self take-up seal on the inlet. Mixer flights are arranged to blend materials completely in minimum time. Ample clean-out doors provide easy accessibility for quick, thorough cleaning. Mixer is available in 37, 59 and 69 cu. ft. mixing capacities.—*Davidson-Kennedy Co., Atlanta, Ga.*

Blender, On-Stream

Continuously delivers uniform product. (128B)

. . . Two-Component Blender is simplified, standardized, packaged unit for on-stream blending. It lowers cost by eliminating tank storage, mechanical mixing, stratification and human errors inherent in manual batch blending. Two types are available: flow-responsive blender and controlled-rate blender. Units can be used for asphalt blending, cutting of heavy fuel oil, blending of butane and gasoline.—*Proportioneers, Inc., Providence, R. I.*

Discharger, Bin

For non-free-flowing bulk materials. (128C)

. . . Exbinner controls removal of non-free-flowing materials from deep storage bins. It makes active a greater portion of bin bottom to eliminate bridging and segregation. Solids can be removed at predetermined rate for delivery at rate exactly equal to conveyor's capacity. Unit can also be used as scale feeder.—*Superior Grain Separator Co., Hopkins, Minn.*

Feeder

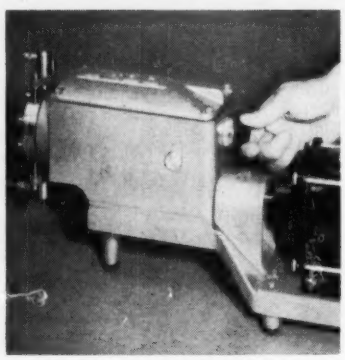
Discharges solids from overhead bin. (128D)

. . . Operating under an overhead bin, reciprocating conveyor feeds constant volume of any dry or moist material. Variations in consistency of material do not effect unit's operation. Conveyor runs on plant air. Electric power used only to operate solenoid air valve.—*Hydro Blast Corp., Chicago 47, Ill.*

Feeder, Low-Rate

Handles micro flow rates. (128E)

. . . Microflo Pulsafeeder pumps, meters, feeds and proportions fluids precisely at micro flow rates. It will work against pressures to 1,000 psig. delivering maximum flow rate of 2,400 ml. per hr. Piston-diaphragm pump has no stuffing box, packing or running seal in contact with liquid being pumped. Hydraulically balanced diaphragm isolates product from all pumping parts. Pumping rate is controlled by varying length of piston stroke through manually operated dial indicator. Rate can be adjusted either while pump is idle or operating.—*Process Equipment Div., Lapp Insulator Co., Inc., LeRoy, N. Y.*



Feeder, Water Treatment

Cuts makeup costs. (128F)

. . . Chemical By-Pass Feeder is simple, inexpensive water-treatment unit used where water or boiler conditions don't justify installation of mechanical proportioning equipment to treat boiler makeup water. Treating compounds are added on the discharge side of the pump. Unit can be used to add either liquid or powdered chemicals to feed water on any hot water or steam generator. It's suited to low-hp. boilers, installations where makeup water is added infrequently.—*Cyclotherm Div., U. S. Radiator Corp., Oswego, N. Y.*

Mixer

For broad-range mixing, handles many jobs. (128G)

. . . Turbulence, created by RKM mixer, swirls throughout container, intimately mixing entire contents. It's done without channeling or loss of energy in wasteful, simple circulatory rotation. Mixer exerts strong suction both above and below to draw materials into primary mixing zone. Among jobs handled are: mixing heavy-viscosity lacquers, heavy liquids, paper pulp, corn starch, gases and liquids, light solids. RKM mixer impeller runs like a double-suction centrifugal pump.—*Neuman & Welchman, Inc., Fairlawn, N. J.*

Mixer, Change-Can

Handles viscosities up to 40,000 cps. (128H)

. . . Inks, paints and chemicals can be mixed and dispersed in portable cans by using the Stevenson change-can mixer. Cans sitting on floor, pallets or dollies are all handled with equal ease. Mixer is built in sizes from 5 to 15 hp., will accommodate can diameters up to 42 in. Mixer speed can be varied from 320 to 640 rpm.—*Stevenson Co., Dayton, Ohio.*

For Your Files—

JOY EQUIPMENT for the CHEMICAL PROCESS INDUSTRIES

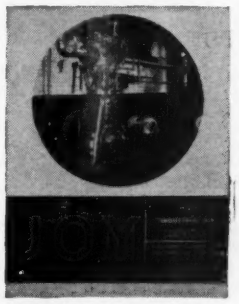
Efficient Joy equipment has long been a standard with the chemical process industries—

- where compressed air must be free of contaminating oil
- where ventilation problems reduce production
- where corrosive materials or atmospheres ruin standard conveyor idlers in a short time.

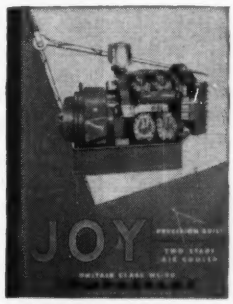
Illustrated here, and free for the writing, are bulletins on this efficient, high-quality Joy equipment. Write today for copies of the bulletins which are of interest to you. *No obligation, of course.*

OIL-FREE COMPRESSORS All sizes of OIL-FREE compressors—172 to 8800 cfm; 30 to 150 psi. *Bulletin A-92C.*

AIR COMPRESSORS FOR INDUSTRY Class WN-112, heavy-duty, V-vertical. 368 to 1948 cfm, pressures to 125 psi. *Bulletin A-62C.*

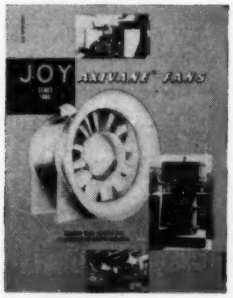


INDUSTRIAL-AIR COMPRESSORS Class WG-9, heavy-duty, vertical design. 172 to 881 cfm, 30 to 150 psi. *Bulletin A-43C.*

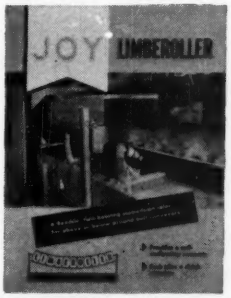


UNITAIR COMPRESSORS Class WL-80, two-stage, air-cooled. 81 to 641 cfm, pressures to 125 psi. *Bulletin A-56C*

PACKAGED GAS COMPRESSORS Gas booster compressors for wide variety of pressures and displacements. *Bulletin A-94C.*



AXIVANE FANS Series 1000 adjustable blade, vaneaxial fans for general industrial applications. *Bulletin J-611C.*



LIMBEROLLER CONVEYOR IDLERS Flexible, two-bearing suspension idlers, ideal for handling corrosive materials. *Bulletin LD-103E.*

BULLETINS NOT ILLUSTRATED

WGO-9 OIL-FREE COMPRESSORS Detailed bulletin on vertical design oil-free compressors and component parts. *Bulletin A-44C.*

HEAVY-DUTY AIR COMPRESSORS Class WN-114, heavy-duty, semi-radial design. 1186 to 8800 cfm, pressures to 500 psi. *Bulletin A-72C.*

AIR OR GAS RECEIVERS Built in accordance with ASME standards. 2½ to 570 cu. ft. capacity, for 23 to 8000 cfm. *Bulletin R-19C.*

AIR AND GAS AFTERCOOLERS Cool and remove water vapor and oil from compressed air. 125 to 7500 cfm capacity. *Bulletin A-27C.*

Write ***Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.*** In Canada: ***Joy Manufacturing Company (Canada) Limited, Galt, Ontario.***

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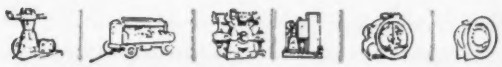
for VANEAXIAL FANS • COMPRESSORS • OXYGEN GENERATORS
VACUUM PUMPS AND BOOSTERS



WAD 15788

JOY

SPECIALISTS IN THE COMPRESSION AND MOVEMENT OF AIR AND GASES SINCE 1885

FEEDERS & MIXERS, continued

Mixer, Industrial

Creates double shearing action. (130A)

. . . Shear-Flow mixer is good for mixing more viscous textile inks, dispersing inks, paints, plastics and gums. Mixing heap produces double shearing action that gives high-speed results at low rpm. Operating torque is low. There is no vortex and aeration is held to a minimum.—*Gabb Special Products Div., E. Horton & Son Co., Windsor Locks, Conn.*

Mixers, Solids

Mix, pug materials from dust to 1¼-in. lumps. (130B)

. . . Whether dry or in slurry form solids can be mixed or pugged continuously with Colonial line of machines. Made in standard sizes, units are engineered with production capacities to suit specific needs. Emphasis is laid on helping plants to shift to continuous processing to cut costs. Features include simplified drive mechanism and diversion-plate mixer discharge to eliminate segregation. — *Colonial Iron Works Co., Cleveland 10, Ohio.*

• Filters and Dust Collectors

Cloth, Filter

Polyethylene, chemically resistant. (130C)

. . . Polyethylene monofilament filter cloth is inherently free flowing, easily cleaned, slow to blind. Moisture absorption factor is less than 0.01%. Cloth resists molds, mildew, sunlight, acids, alkalis, certain organic solvents.—*National Filter Media Corp., New Haven 14, Conn.*

Cloth, Filter

Synthetic, chemically inert. (130D)

. . . Teflon filter cloth offers high service temperature and inertness to most chemicals. It's attacked only by fluorine gas, molten alkali metals and tri-chlorine fluoride. Moisture absorption is 0.0%. Cloth's resistant to mildew and sunlight.—*National Filter Media Corp., New Haven 14, Conn.*

Collector, Dust

Has efficiency boosting system flow-pattern. (130E)

. . . In Paraclone dust collecting system two cyclone circuits are used to eliminate recycling of dust, thus boosting efficiency and reducing erosion. Disadvantage of conventional large installation of small cyclones is overcome by producing an equal suction at the dust discharge of individual cyclones. Allowing for increased efficiency, Paraclone collecting system is competitive, costwise, with conventional single circuit systems. Paraclone can handle high- or low-temperature gases as well as abrasive or non-abrasive particles.—*Aerodyne Development Corp., Cleveland, Ohio.*

Collector, Dust

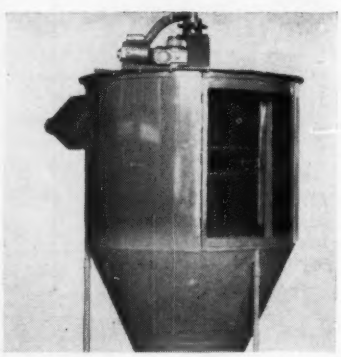
Reverses tangential flow. (130F)

. . . Amerclone dry granular-dust collector, unlike conventional centrifugal collectors, reverses tangential flow by an outside-in twist. It traps fly ash and dust. Effectiveness depends on a conical inlet imparting a swirling motion to dust particles while permitting clean air to travel through without changing direction.—*American Air Filter Co., Inc., Louisville 8, Ky.*

Collector, Dust

Based on reverse jet, hikes efficiency. (130G)

. . . Reverse-air-jet dust collector gives high efficiency. Design allows unit to handle extra heavy dust loads without overloading. Dust can be collected economically in pneumatic conveyors operating under high-pressure conditions. Collector is built with large cylindrical perforated-metal cage enclosed in cylindrical housing. Filter medium is supported on exterior surface of cage. Dust and dirt are filtered out of air as it passes inward through cylindrical filtration element. Model R Aeroturn operates in the range from 300 to 10,000 cfm.—*Turner & Haws Engineering Co., Boston, Mass.*

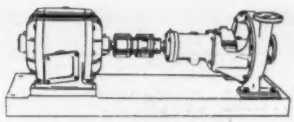


Collector, Wet Dust

Achieves high capacity by unique vane design. (130H)

. . . "CW-1," wet dust collector, combines twin features of handling problem dusts safely while providing efficient dust control. Unit is a tower designed for countercurrent flow of air and water. Multiple wet-vane sections and a final water entrainment vane section use a patented vane design. With increased impingement surface, vanes thoroughly intermix air and water by vigorous centrifugal action.—*Pangborn Corp., Hagerstown, Md.*

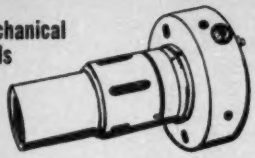
BJ pumps for chemical process pumping



BJ chemical pump with mechanical seal

Fitted with special BJ Mechanical Seal which provides positive protection against leakage to bearings or contamination of the pumped liquid. Adjusting sleeve permits easy impeller adjustment without dismantling.

mechanical seals



Replace standard packing in stuffingboxes. Eliminate excessive leakage and frequent repacking. Recommended for corrosive, high temperature or volatile liquid pumping. Prevent contamination of pumped liquid.

type VMT pumps

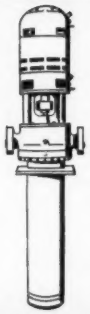
Designed for pumping liquids from sub-zero to 750° F.—corrosive or non-corrosive—where NPSH is limited. Capacities to 5000 GPM and heads to 575 ft. Smaller "VLT" models also available in capacities to 120 gpm.

molten metal pumps

Handle liquid metals and molten chemicals at temperatures to 1500° F. Liquids include: molten magnesium, sodium, lead, bismuth and many others.

liquid oxygen pump

Specially designed to handle liquid oxygen or nitrogen at temperatures as low as —300° F. Capacities to 300 gpm. Heads to 3000 ft.



hydropress pumps

For medium to high pressure pumping at low capacity. Vertical construction saves space, simplifies installation. No relief valves required. Uniform non-pulsating flow. Capacities to 300 gpm. Heads to 7000 ft.

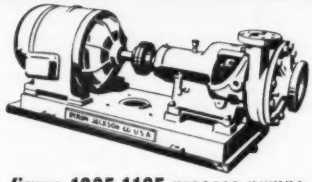
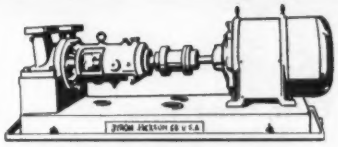


figure 1025-1125 process pumps

Moderately priced pumps for general-purpose handling. Available with BJ Mechanical Seal. Capacities to 2000 gpm, heads to 800 ft. Temperature limit 350° F.

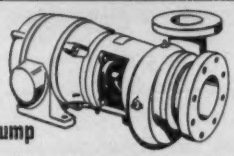


2-stage SM process pumps

For pumping fluids over a wide range of pressures and for temperatures up to 800° F. Ideal for pumping hot or cold liquids near their boiling point. Capacities to 2200 gpm and heads to 1600 ft.

multiplex pumps

Recommended for boiler feed, pipeline, debarking and all classes of medium-to-high pressure and temperature service. Easy inspection or cleaning without disturbing piping, bearings or driver.



bilton pump

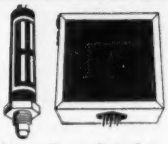
A general-purpose, close-coupled pump and motor unit. Mounts in any position with no rigid base needed. Especially useful where space is limited. Available with BJ Mechanical Seal and explosion-proof motor. Capacities to 2000 gpm and heads to 475 ft.

submersible pumps

For well pumping, booster stations, or for standby service. Pump and sealed motor operate completely submerged. No pump house or surface structure needed. No well too deep. Ideal where flood menace exists. Capacities to 20,000 gpm and heads to 1800 ft.

sumpmaster pumps

Available in more than 3000 combinations. Recommended for cooling and circulating and for booster service. Also general sump service. Self-priming. Available in standard column lengths of 5, 10, 15 and 20 ft.—with or without outer barrel. Capacities to 2600 gpm, heads to 300 ft.



vibrotron electronic pressure and temperature gages

Ideal for "watching" multiple processing operation and for "feeling the pulse" of pipelines. Pressure, temperature, displacement and acceleration can be measured and directly signaled in numbers. For more detailed information, contact the Byron Jackson Co., Electronic Division.

BJ SINCE 1872

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PUMPS

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FILTERS & DUST COLLECTORS, continued

Collector, Wet Dust

Contacts dust with water curtain. (132A)

. . . In this collector, dust and fume-laden air contact liquid continuously during flow through the unit. A cylindrical drum with a series of cones and baffles, collector produces cascade of water across the path of air flow. Baffles set up a cyclonic washing action and turbulence, separating wet dust and carrying it to the tank below. Solids removed from the air stream settle out in the sludge tank and clarified water is recirculated. Sludge is removed either manually or by conveyor.—*Van-Truer Co., Detroit 23, Mich.*

Filter, Air

Offers choice of 3 different efficiencies. (132B)

. . . Special glass-fiber mats and deep-pleated design permit Aerosolve filter to operate with high efficiency and low pressure drop. There's a choice of three different filter cartridges with efficiencies ranging from 30 to 95%. Aerosolve filters have large dirt-holding capacity and long life. Since dirt is collected inside the pocket formed by the Aerosolve filter cartridge, dirt doesn't spread through the downstream ductwork during replacement of the cartridge. Aerosolve filter measures 2 x 2 x 1 ft. and has a surface area of more than 40 sq ft. By placing frames in V formation, duct velocities over 400 fpm. results.—*Cambridge Filter Corp., Syracuse 3, N. Y.*

Filter, Air

High efficiency due to self-charging electrostatic action. (132C)

. . . Key to Electra air cleaner's high efficiency is increased voltage of natural electrostatic charges on Dacron polyester fiber—due to friction of air passing through fibrous mat. Polyester media is coarse and resilient to withstand impact and abrasion from large particles, yet is free of large openings that would pass air-borne particles. Cleaner traps both by impingement and electrostatic action. Media can be cleaned by immersing in water or holding under a stream of water.—*Extra-Aer Co., Houston, Tex.*

Filter, Compressed Air

Has transparent cylinder. (132D)

. . . Model 65C Sta-Dri separator has cylinder walls of transparent plastic, ¼-in. thick and tested to withstand over 600 psi. Cylinder gives clear view of filter elements. Approximate cleaning capacity of the two silk-encased filters in the separator is a million cu. ft. Unit is recommended for use where compressed air for process must be absolutely clean and dry to maintain production and product quality.—*Beach Precision Parts Co., Boonton, N. J.*

Filter, Dust

Passes gas through moving beds of solids. (132E)

. . . A bed of moving granules in Impingo filter removes fumes, dust, smoke from air or gas. Gases pass horizontally through two or more cells containing moving granules. Solids in the gases strike the granules and adhere. Dirty granules move downward, passing out of the cells, through a washing circuit, back to the cell tops. Units recommended for controlling fumes and smoke in coke quenching.—*Mechanical Industries, Inc., Pittsburgh 22, Pa.*

Filter, Fibrous Glass

Checks radioactive gas. (132F)

. . . Hanford Atomic Products Operation uses fibrous glass filter to purge exhaust gases of radioactive particles. Bed of glass fibers is 7 ft. deep and 56 ft. long. Filter is more efficient and less costly than sand filters formerly employed for this job.—*General Electric Co., Schenectady 5, N. Y.*

Filters, Porous-Metal

Competitive with "throw-away" types. (132G)

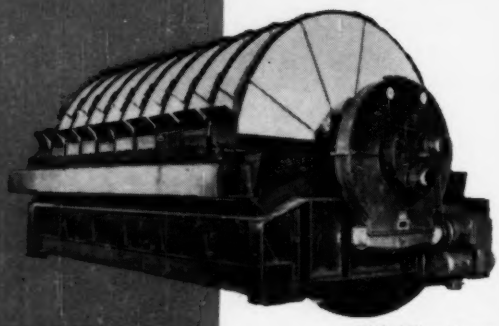
. . . Filters with permanent, porous stainless steel media have dropped in price 30 to 50 percent. New price schedule covers stock Surfamax filters including (1) porous media grades for removal of particles larger than 55, 22, 12, 7, 3 or 2 microns in size; (2) filter areas up to 4 sq. ft. in stock sizes, up to 10 sq. ft. in other standard models; (3) flow capacities up to 50 gpm. of water or oil, 400 cfm. of air; (4) connections for service on ¼ to 2 in. pipelines. — *Micro Metallic Corp., Glen Cove, N. Y.*

Scrubber, Gas

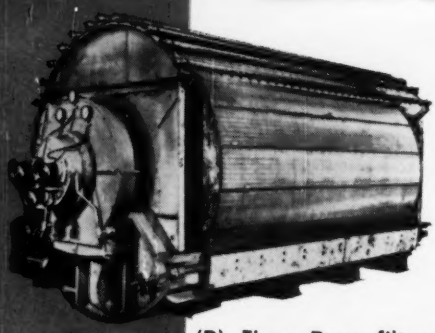
Gives clean plant effluent. (132H)

. . . Turbine Scrubber is sure-fire in knocking down air-borne pollutants emanating from plants. It thoroughly wets and holds air or gas-borne particles, eliminating water-insoluble dust or finely-divided particulate matter. Because it can contact gas and liquid intimately it shows promise for process work too. Scrubber can be built either in single or multi-stage for both cleaning and contacting jobs. It can be tailored to fit needs of both large and small-volume requirements. Turbine Scrubber can handle small volume jobs economically, displacing apparatus that, in many cases, is completely inadequate. As such, it is a new tool for scrubbing flows under 10,000 cfm.—*Pollution Control Corp., Westfield, N. J.*

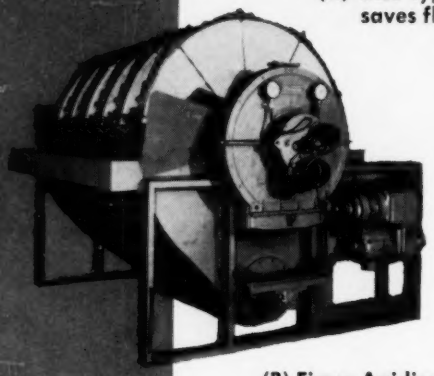
EIMCO
EIMCO
CONTINUOUS
VACUUM
AND
PRESSURE
FILTERS



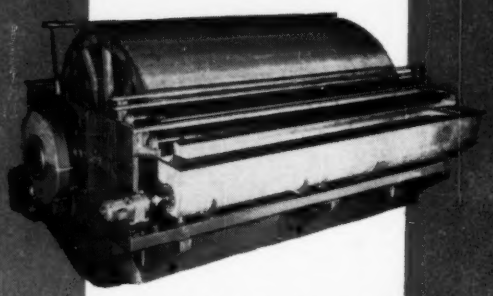
(A) Disc type Eimco filter saves floor space.



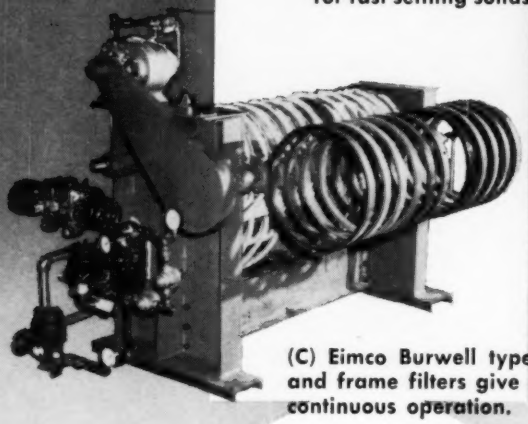
(D) Eimco Drum filters are made in many sizes of many different metals.



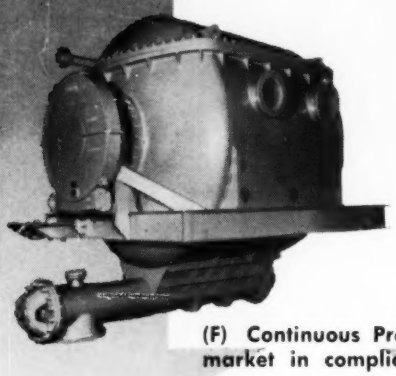
(B) Eimco Agidisc filters for fast settling solids.



(E) String discharge attachment on Eimco filters is heavy-duty design.



(C) Eimco Burwell type plate and frame filters give almost continuous operation.



(F) Continuous Pressure filters find market in complicated flow sheet.

VACUUM AND PRESSURE FILTERS

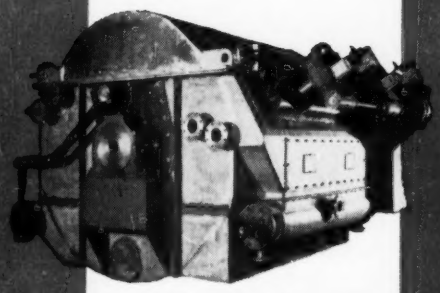
Separation of liquid-solid slurries through filtration, has been developed to a science by Eimco's Research and Development Center located at Palatine, Illinois. These new, modern, completely equipped facilities, are staffed by competent research specialists. These men are recognized internationally as authorities in the field of liquid-solids separation. Eimco combines its years of practical experience with scientific findings to completely engineer liquid-solids separations. This engineering benefits all concerned with the processing industries where filtration is an integral part of the flow sheet. It is Eimco's sole aim to see the proper filter applied to each filtration problem.

EIMCO makes filters for each general classification or type used in industry today. Some of these are illustrated above and the general description follows.

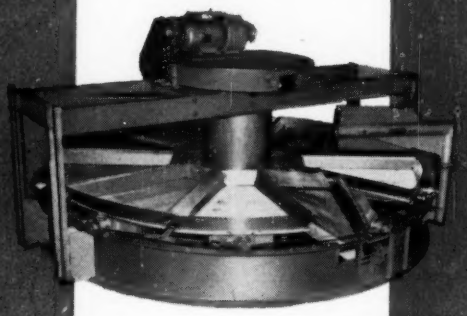
Each of the filters is made in a complete range of sizes (see back) and constructed in a wide variety of materials including metals, plastics, rubber and wood. Each is engineered to best fit the customer's need.

EIMCO DRUM TYPE FILTERS (D.E.F.G.J. K.L.)—This is the most complete line of drum type filters available from any manufacturer. Drum filters are available for high or low submergence with wash frames, scoring devices, compression rolls and many other devices they are also available with vapor tight or pressure tight hoods. Knife advancing mechanisms are available for low or high submergence units using a pre-coat. String or blanket discharge mechanisms, compression blankets, roller discharge and many other devices may be incorporated to produce the desired end product.

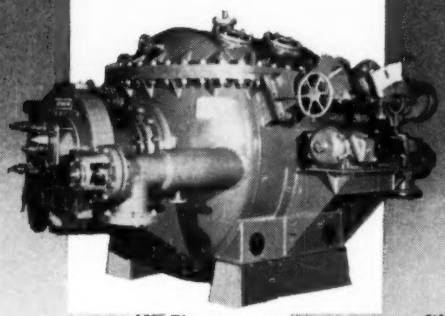
EIMCO DISC AND AGIDISC TYPE FILTERS (A.B.K)—These filters are applicable to many of the jobs done by drum type filters and have the advantage of lower space requirements for the same amount of filter area. Many special attachments are available for the disc filter to adapt it to the customer's needs. Agidisc filters are recom-



(G) High submergence precoat with vaportight hood. Eimco also makes low submergence precoat type filters.

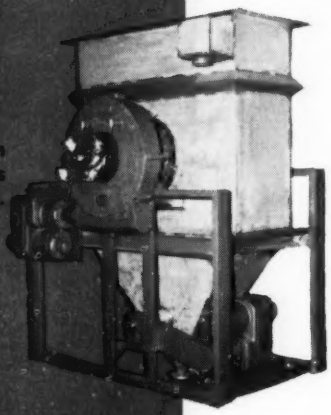


(H) Eimco pan type filter uses gravity and vacuum for rapid dewatering.

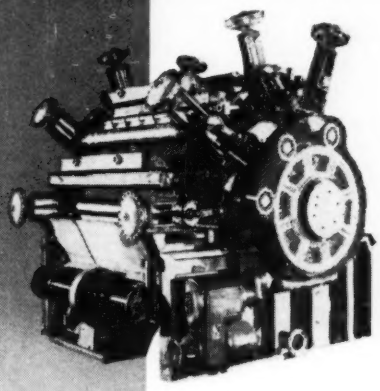


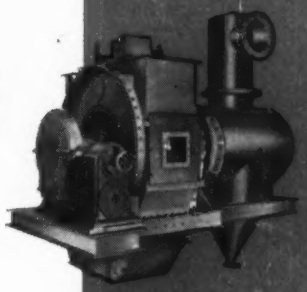
(J) Eimco pressure precoat filters are highly efficient and dependable.

(K) Eimco sand type filters are unmatched and have wide application as drum or disc units.

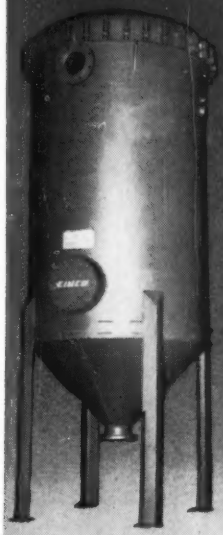


(L) Eimco Ti-carb filters are examples of specialized filtration equipment.





(M) Eimco top feed dryer offers new savings to dryer uses.



(N) Eimco Shelley filters for clarification and polishing.

FOR EVERY PROCESS INDUSTRY

mended where the slurry contains fast settling solids and there is a wide range of particle size in the slurry.

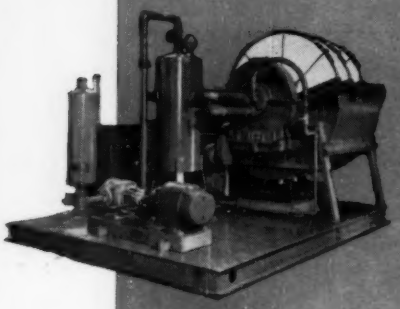
EIMCO PLATE AND FRAME TYPE FILTERS (C) — Eimco-Burwell filters are plate and frame filters with the exclusive advantage of eliminating down time for cleaning frames. The unit consists of two frames mounted 180° of each other on a common shaft. While one is rotated in between the plates for filling the other is automatically moved out into cleaning position.

EIMCO DRUM AND DISC PRESSURE UNITS (F.J)—Eimco pressure type filters are used to open entirely new fields in filtration. Many metallurgical and chemical processes have benefitted from Eimco research in this field of fluid solids separation. Pressure filters are of drum and disc design and may be used continuously with discharge through a locking chamber.

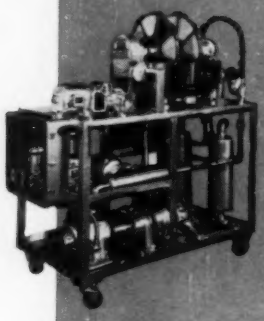
EIMCO PAN TYPE FILTER (H)—Using a combination of vacuum and gravity the pan filter is a most efficient filter unit. The main advantages of this unit are in sharp liquor separations, clean discharge and a perfectly clean washed and dried filter media at each revolution.

EIMCO VERTICAL TYPE PRESSURE FILTERS (N) — Eimco-Shelley filters are constructed of heavy material to A.S.M.E. code specifications. They give an unrestricted flow of liquid and are popular for use in clarification, emulsion breaking, boiler feed water and many other applications. Shelley type filters are available in several sizes, may be used with cloth or other common media depending on plant requirements.

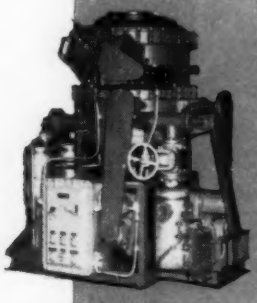
EIMCO SPECIAL FILTERS (L) — Many new, strange looking filters have been designed in recent years to meet the rapidly expanding requirements of the process industries. These units are built after the Research and Development Division, working with the customer, have ruled out any standard procedure and find that specialized equipment is desirable.



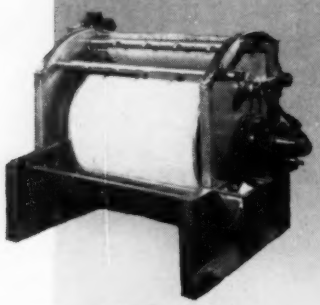
PILOT DISC



LAB DISC



LAB CONTINUOUS PRESSURE PRECOAT



PILOT DRUM

EIMCO FILTER MEDIA

Eimco Filter Media Division stocks many synthetic and natural fibers woven into numerous patterns to produce an infinite selection of media to answer any filtration requirement.

The selection of the proper media for your filter will pay for itself many times by eliminating blinding, frequent shut-downs for cloth changing and other reasons for media failure.

An Eimco engineer will be glad to consult with you on media problems and the Filter Media Division will send the samples of the recommended media for your test work.

Eimco's experience in this field has increased media life for some customers to as much as FIFTY times the life of the media used on the filter, with a media that cost only approximately three times as much as that in use at the time the change was recommended.

EIMCO LABORATORY AND PILOT PLANT TYPE FILTERS

Eimco's complete line of filtration equipment includes proportional sized units suitable for laboratory work. These small units are available in 2 and 4 square foot sizes for disc units and 4 or 8 square foot sizes for drum units.

These small filters are available as laboratory "C F P" units. Complete filter plant units are cabinet style with the filter mounted on top and complete operating equipment mounted in conveniently arranged shelves below or to the side of the filter. The unit thus built consists of vacuum pumps, blower, receivers, filtrate pumps, electrical equipment, all wired and piped and mounted on casters so that it may be rolled to any point in the plant for test operation.

Larger size units for pilot plant operation in either drum, disc or other design includes filters to meet the plant requirements. These units are also fully equipped ready to make the necessary service connections.

AREA IN SQUARE FEET OF FILTERING SURFACE FOR DISC FILTERS

Number of Discs

Diam.	1	2	3	4	5	6	7	8	9	10	11	12
18"	2	4										
3'0"	11.5	23	34.5	46								
4'0"	22	44	66	88	110	132						
6'0"	50	100	150	200	250	300	350	400	450	500		
8'10"		208	312	416	520	624	728	832	936	1040	1144	1248
10'6"					750	900	1050	1200	1350	1500	1650	1800
12'6"					1000	1200	1400	1600	1800	2000	2200	2400

AREA IN SQUARE FEET OF FILTERING SURFACE FOR DRUM FILTERS

Length in Feet

Diam.	1	2	3	4	5	6	7	8	9	10	12	14	16	18
18"	4	8												
3'0"	9.5	19	28.5	38	47.5	57								
4'0"	12.5	25	37.5	50	62.5	75	87.5	100						
5'3"	16.5	33	49.5	66	82.5	99	115.5	132	148.5	165				
6'0"			57	76	95	114	133	152	171	190				
8'0"						150	175	200	225	250	300	350	400	
10'0"										314	377	440	503	
11'6"										361	433	505	578	650
12'0"											453	528	603	678
14'0"												615	703	790

PAN FILTERS IN SQUARE FEET OF FILTER AREA AS FOLLOWS:

10, 25, 60, 90, 120, 150, 180, 210, 240 and larger

RENTAL TEST EQUIPMENT

Eimco also has a number of test filters of various sizes and designs which are available for rental service in the user's plant. An Eimco filtration engineer will be glad to talk over your filtration problem with you and suggest the proper unit for your test work.

TEST FOR FILTERABILITY

Eimco's Research and Development Center also maintains an extensive testing department devoted exclusively to the determination of filter requirements for those legitimately in the processing business.

For instructions in sending samples for analysis or research, write Research and Development Center, The Eimco Corporation, 301 South Hicks Road, Palatine, Illinois, or the branch office in any of the cities listed below.

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THE EIMCO CORPORATION

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• Heaters and Coolers

Boiler, Packaged

Has high capacity and efficiency. (137A)

. . . New Fintube boiler produces more steam and requires less space than earlier designs. Internal finning provides increased area (fire-side to water-side ratio of about 3:1) and increases turbulency of hot gases, thus improving heat transfer. Boilers are AGA-approved for all gaseous fuels and have been thoroughly tested on liquid fuels. —*Brown Fintube Co., Elyria, Ohio.*

Burner, Process

Controlled by varying air pressure. (137B)

. . . Series 620-P line of burners features control by varying pressure in air supply line. Burners are designed for use as multiple units on furnaces, ovens, kilns with control from central point. Air-oil ratio and capacity are controlled through single valve in combustion-air supply line serving burners. Varying air pressure is cross-connected to an air-oil ratio regulator for integrated varying of pressures. Burners are available either for oil or for a combination oil-gas service.—*Hauck Mfg. Co., Brooklyn 15, N. Y.*

Chiller, Liquid

In wide capacity range, also used for gas. (137C)

. . . Group of liquid or gas chillers reduces temperatures to as low as —130 F. They're used for condensing CO_2 and recirculated processing of pharmaceutical, chemical, petroleum products. Portable models are available from 0.5-7.5 hp. Larger remote installations have capacities to 200,000 Btu. per hr. and up to 100 hp. depending on temperatures needed. Chillers use patented cascade system with Freon 13 or 22.—*Conrad Inc., Holland, Mich.*

Condenser, Evaporative

Large capacity, low water consumption. (137D)

. . . This ammonia condenser with 200-ton refrigeration capacity consumes less than 5% of the water used by submerged coil condensers of equal capacity. The condenser operates by evaporating sprayed water from the surface of condensing coils through which the refrigerant gas passes. Reverse direction air flow is utilized to increase unit capacity and greatly reduce outlay for electric power. — *Niagara Blower Co., New York 17, N. Y.*

Condensers, Sectional

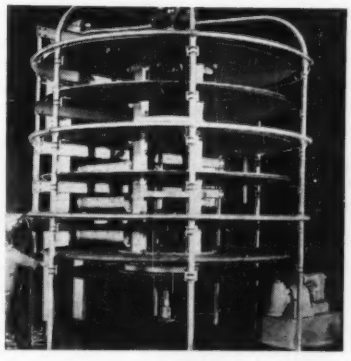
Have cast-in water passages. (137E)

. . . Pattern condensers are made of interchangeable sections with domed top and bottom covers. Water passages are formed in the castings. If process change calls for increase or reduction in cooling surface area, interchangeable sections can be removed or added readily. When large cooling area is required, two sets of condenser sections can be mounted in parallel connected by T pipes.—*Cannon (CP) Ltd., Deepfields, Bilston, Staffs, England.*

Cooler, Melt

10-ft. diameter trays stacked to save space. (137F)

. . . Roto-Shelf cooler with six trays mounted on a vertical shaft occupies a space only 16 ft. square by 12 ft. high. With each tray operating as a separate cooler it continuously cools and solidifies sulfur, pitch, etc. Cooling water flows through baffled interior of each shelf, assuring uniform cooling, minimum water consumption. Stationary ramp lifts material from rotating tray into breakers that discharge into screw conveyors feeding a common take-away conveyor. Flow rate of water and rotational speed of trays are variable.—*Buflovak Equipment Div., Blaw-Knox Co., Pittsburgh, Pa.*



Element, Heating

Mineral-insulated. (137G)

. . . Insulated resistance heating element with copper sheath withstands up to 480 F. continuously. It resists mechanical abuse and corrosives. Wide range of lengths. — *Continental Electric Equipment Co., Cincinnati 1, Ohio.*

Exchanger, Heat

For heat-sensitive materials. (137H)

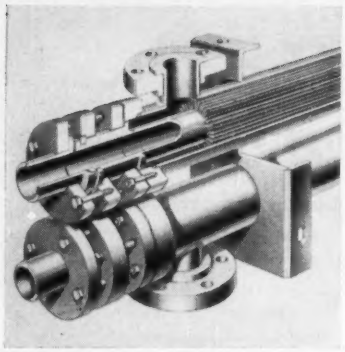
. . . Process heater of stainless steel heats high velocity flow rapidly, is applicable to heat-sensitive materials. Shell and tube design provides for steam distribution and thermal expansion through a combination steam distributor, thermal expansion joint and baffled shell. Quick-opening heads expose internal surfaces for easy cleaning. Instrumentation, vacuum and recirculation systems can be furnished. — *Oscar Krenz, Inc., Berkeley 10, Calif.*

HEATERS & COOLERS, continued

Exchangers, Fin-Tube

For heavy-duty corrosive service. (138A)

. . . Making use of a new method of heliarc welding longitudinal fins to tubes, new line of fin-tube heat exchangers is built especially for service where corrosion or contamination are factors. Exchangers use new-type fin tubes in double-pipe arrangement. They're designed to give exceptional service where conventional bare-tube heat exchanger is unsuitable or where one fluid has an appreciably higher resistance to heat exchange than does the other one. Units are adaptable to changing load requirements in a given plant.—*American Locomotive Co., Schenectady 5, N. Y.*



Exchangers, Heat

Combine standardization and optional features. (138B)

. . . Line of semi-standard heat exchangers satisfy variety of heat-transfer problems. They can be shipped within two or three weeks following receipt of order, yet include optional features, e.g. nozzles of any specified size and location. Exchangers are built with or without expansion joint and in either stainless or carbon steel. If other alloys are specified, delivery time will be lengthened. — *Downingtown Iron Works, Inc., Downingtown, Pa.*

Fan, Cooling Tower

Stronger, stiffer, gives better efficiency. (138C)

. . . Hartzite plastic cooling-tower and heat-exchanger fans are now stronger, stiffer, more efficient. For fans 14 to 22 ft. in dia. improvements include use of tapered blade which is considerably thicker at the shank than at the tip. Heavily reinforced leading edge increases stiffness, practically eliminates sag. Building up the reinforced leading edge also produces tear-drop cross section to smooth out air flow over blades and increase air delivery.—*Hartzell Propeller Fan Co., Piqua, Ohio.*

Generator, Combination

Either for hot water or steam. (138D)

. . . Combination steam-hot-water generator provides hot water for basic process heating yet can convert to steam for cleaning and limited processing. While the 60-hp. unit is essentially a hot-water generator a few simple adjustments convert it to steam operation within seconds. On either steam or hot water the generator operates automatically once the type of generation is selected.—*Cyclotherm Div., U. S. Radiator Corp., Oswego 1, N. Y.*

Generator, Steam

Packaged unit for low-cost steam. (138E)

. . . Type D packaged steam generator has proven tube arrangement and most advanced features for production of low-cost steam. Generators are performance-rated for high availability and long life at capacities up to 40,000 lb. per yr. continuously. They're completely assembled and fire tested at the factory before shipment, can be fired with either gas, a variety of fuel oils or both.—*Superior Combustion Industries, Inc., New York 36, N. Y.*

Heater, Electric

For air, surface heating. (138F)

. . . Vane-type Calrod electric heater fits into heating applications such as pipe, platen, valve and pump, process machinery. With large radiating surface made possible by 1¾ in.-wide vane, it's rated at 14.3 w. per sq. in. or 25 w. per linear in.—*General Electric Co., Schenectady 5, N. Y.*

Heater, Flexible

In blanket or strip form. (138G)

. . . Flexible blanket or strip electric heating elements serve many heating needs. Thinness (0.10 in. or less) and flexibility allow installation where, in many cases, other types of heating elements are unsuitable. Light weight often is a factor in their selection as is their ability to operate under pressures in excess of 100 psi. Unit insulation is silicone rubber and fibrous glass cloth. Assembly can withstand continuous operation at temperatures above 450 F. —*Electro-Flex Heat, Inc., Hartford 5, Conn.*

Heater, Hot Oil

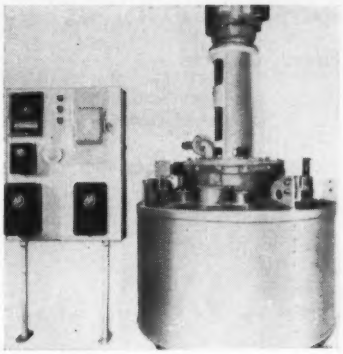
Ups small refinery output. (138H)

. . . Adapted from Vapor-Clarkson steam generator, hot oil heater has increased output of refinery crude distillation unit by 16%. By pumping reheated stock back into the column, hourly output at one plant has been upped from 60 to 70 bbl. per hr. Fuel for heater is offgas from one of the thermal cracking units.—*Vapor Heating Corp., Chicago 31, Ill.*

Heater, Hot Salt

Fits pilot plant needs in 650-1,000 F. range. (139A)

. . . Through circulation of hot salt, Beth-Tec unit can supply pilot plant needs for process heat up to 250,000 Btu. per hr. Unit is complete with salt tank, electrical heaters, circulating pump and instrumentation for safety and control. Carbon steel tank is completely insulated. Electrical immersion heaters are suspended individually from tank cover, can be removed readily. Submerged-impeller centrifugal pump mounted on tank cover circulates hot salt to process. Instrumentation gives flexible heat quantity, temperature level control.—*Bethlehem Foundry and Machine Co., Bethlehem, Pa.*



Heater, Immersion

For a.c. or d.c. (139B)

. . . This flange-type immersion heater operates on either a.c. or d.c. circuits at 115 or 230 v. and up to 125 psi. Calrod elements give high watt density. —*General Electric Co., Schenectady 5, N. Y.*

Heater, Immersion

Corrosion-resistant. (139C)

. . . Immersion heater of impervious graphite is for service involving nitric acid. Plastic-coated steel hanger assures proper location of HN Norcordal heater. — *Heil Process Equipment Corp., Cleveland 11, Ohio.*

Heaters, Drum

Wrap around 55-gal. drums. (139D)

. . . Woven, electric-resistance heaters, snap-fastened around 55-gal drums, supply heat to melt or thin material in drums. Heaters are made of alloy resistance wire insulated with tough fibrous glass, can withstand 450 F. sheath temperature continuously. For heating acid or alkali compounds, Teflon insulated elements are available.—*Pre-Fab Heater Co., Guilford, Conn.*

Heaters, Electric

In continuous lengths. (139E)

. . . Corox electric heating units are available in continuous lengths up to 25 ft. with an outside diameter as small as 0.230 in. Use of single, low-watt density heaters in lengths as long as 25 ft. eliminates "sets" of two or more heaters requiring additional terminals and wiring at added costs.—*Westinghouse Electric Co., Pittsburgh 30, Pa.*

Heaters, Standard

For high-speed tank heating of solutions. (139F)

. . . For general fluid heating service Hi-Therm grid heater offers maximum amount of prime heat transfer surface in limited space. High concentration of heating surface outperforms other types of tank heaters. With high conduction and convection factor staggered tube arrangement accelerates fluid motion to promote agitation. Normal heater construction is wrought steel pipe tested for 350 psi. They can also be furnished in stainless steel, copper, aluminum, nickel, brass.—*Rempe Co., Chicago 12, Ill.*

Mantle, Heating

For process equipment, withstands heavy usage. (139G)

. . . Glas-Col R is electric heating mantle for heating process units to 650 C. Rugged fabric withstands punishing treatment of pilot plant and production usage. Turns of Nichrome resistance-wire element (woven into fabric spirally, from bottom up) are closely spaced at bottom, spreading out toward equator of vessel. Heat input is thus greatest around bottom center and less along flask walls.—*Glas-Col Apparatus Co., Terre Haute, Ind.*

Panels, Heating

Furnished in variety of shapes. (139H)

. . . Curved Thermo-Panels can be furnished to aid in meeting heat exchange requirements. They can be placed around tanks, under troughs; can be used as part of the vessel structure in construction of tanks, vats, kettles. Thermo-Panels are also available in special shapes and in a wide range of materials including steel, stainless steel, Monel and other alloys. Finished units are easier to install and clean than standard pipe coils.—*Thermo-Panel Div., Dean Products, Inc., Brooklyn, N. Y.*

Tape, Heating

Stretches around uneven surfaces. (139I)

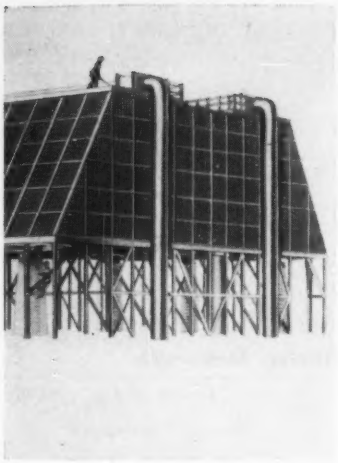
. . . Knitted electrothermal tape is made of current-carrying, resistance-heating bands insulated on both sides with layers of knitted glass yarn. Construction makes it safe to wind tape on metal. Insulation on both sides minimizes heat losses. Tape doesn't buckle, can be stretched or squeezed to fit equipment being heated. It comes in ½-, 1-, 2-, and 3½-in. widths in lengths of 2, 4, 6, and 8 ft.—*Arthur S. LaPine & Co., Chicago 29, Ill.*

HEATERS & COOLERS, continued

Tower, Cooling

Parts rearranged for better efficiency. (140A)

. . . Rearrangement of standard tower parts provides Wind-trol cooling tower with better efficiency, reduced maintenance, longer life. Wind and tower structure are balanced for all conditions so that recirculation of air is eliminated. Unsaturated air can pass freely under the tower, supplying forced draft fans on both sides. There's always excess unsaturated air discharging from the leeward side to prevent backward movement of saturated air discharging from the tower. Fans aren't part of the main structure, thus do not vibrate the structure. Other tower features include a water-tight redwood basin protected with a special waterproof membrane and relative freeness from fungus attack.—Santa Fe Tank & Tower Co., Los Angeles 58, Calif.



Transfer System

Heats by circulating hot oil. (140B)

. . . High liquid temperatures over a wide range are obtained with this low-cost, low-pressure, packaged heating system. Chemically stable heat transfer oils are heated automatically by electricity and circulated at any desired temperature up to a maximum in the range of 600 F. Five standard systems are available with heat outputs up to 50 kw. Relief valves provide protection.—*Whitlock Mfg. Co., West Hartford 10, Conn.*

Vaporizer, Dowtherm

Package unit designed for 4 million Btu. per hr. (140C)

. . . Designed for close coupling with process units Eclipse horizontal Dowtherm vaporizer can handle vapor and liquid phase heating requirements up to 4 million Btu. per hr. Furnished as a complete package vaporizer it is ready to go once fuel, electricity, stack and Dowtherm piping are connected. Design features include (1) operation with low liquid level permitting use of gravity-return condensate system, (2) all heating surfaces below liquid level to protect tubes from burning and to increase efficiency. Large enclosed furnace provides high heat output without strain. Unit can operate on either gas or oil.—*Eclipse Fuel Engineering Co., Rockford, Ill.*

• Instruments and Controls

Amplifier, Indicating

Reliable in measuring minute signals. (140D)

. . . Minute d.c. signals from instruments such as strain gages, thermocouples, null detectors, photocells can be measured with increased reliability using 2HLA-3 d.c. indicating amplifier. Signals as low as 2×10^{-15} w. can be amplified and measured. — *Doelcam Corp., Boston 35, Mass.*

Analyzer, Infrared

Can be operated with a pneumatic recorder-controller. (140E)

. . . Manufacturer's standard Model 21 plant steam analyzer now can be modified to provide a direct pneumatic signal of high accuracy to operate recorders, controllers or pressure gages. Demand for modification arises from hazardous operations and where graphic panels make small pneumatic recorders essential. Chief disadvantage of pneumatic operation is a fixed range determined by the constant of the pneumatic bellows and the shape of the optical wedge.—*Liston-Becker Instrument Co., Inc., Springdale, Conn.*

Analyzer, Nitric Oxide

Uses gas paramagnetic characteristic to give composition. (140F)

. . . Continuous nitric oxide analyzer operates by virtue of reaction of the gas to a magnetic field. Two identical glass-covered, heated electric resistors —acting as legs of a Wheatstone bridge—are mounted within two interconnected chambers. In one chamber —close to the resistor—there's a movable magnet. If NO-containing gas passes through the chamber, gas molecules are attracted by the magnet. At this point the resistor heats the gas in direct proportion to the amount of NO present. Heated gas loses its paramagnetism, is forced up and out of the magnetic field by a cooler, paramagnetic gas below. The cooled resistor undergoes resistance change with temperature variations.—*Hays Corp., Michigan City, Ind.*

What is your processing equipment problem?

Sticky products?
Corrosion chewing up equipment?
"Custom" designs too expensive?
Product contamination?
Replacement costs too high?
Cleaning takes too long?

There's a solution for you on this page

Process Engineering . . . a Pfaudler Specialty

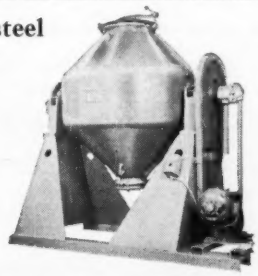
Today you can set up a new process in your plant, without adding a single extra man to your staff!

Simply turn your problem over to Pfaudler's process engineers, who design the complete equipment assembly, fabricate or procure the equipment itself, and supervise its installation and operation.

Impartial selection of materials. Pfaudler process engineers are trained to select the materials which are best suited to every process from the standpoint of corrosion resistance, yield and cost. They use glassed steel, other nonmetals, stainless steel or whatever choice of alloys will do the job best.

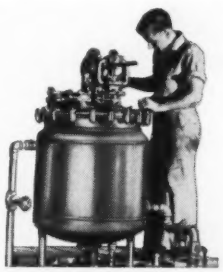
Fields in which Pfaudler process engineers have already scored success include synthetic detergent, pesticide, pharmaceutical, resin and plastic plants, waste recovery systems, solvent and acid recovery systems. They are constantly exploring new fields . . . tackling new problems . . . developing new techniques to help you cut processing costs.

Glassed steel conical dryer-blender



For drying corrosive products, the Pfaudler glassed steel conical dryer-blender is extremely fast, and highly corrosion resistant. A large manufacturer uses it to dry a product containing acid halides, and accomplishes the same amount of drying in 7 hours that formerly required 4 or 5 *days!* Pfaudler is prepared to conduct, at no cost to you, confidential tests of your product in this remarkable dryer, to help you determine whether it will meet your needs.

Glassed and stainless steel reactors, storage tanks



Glassed steel reactor for pilot plant.

Complete range of standard sizes from 1-gallon autoclave to 2,000-gallon heavy-duty reactors which are resistant to both acid and alkaline solutions. Duplicate laboratory yields in full-scale commercial production. Sticky products will not adhere to glass. During processing you can keep your product free of metallic contamination because Pfaudler offers a complete line of glassed steel pipe, fittings and valves.

Learn more! *For more cost-cutting and process-improving information, make yourself known by dropping a card in the mail to us, and we'll route additional helpful data and bulletins to you, relating to your own particular interests.*

Heat exchangers, condensers

Cross section, standard stainless steel exchanger.

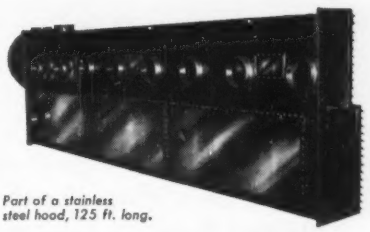
"Flexible standard" alloy designs provide custom-built features at a competitive standard price. Standard glassed steel designs are available for highly corrosive services.

Columns—glassed or stainless steel

For fractionation, stripping, absorption, adsorption, or extraction. You or Pfaudler engineers specify the performance you want. Pfaudler will see to it that the column (and accessory equipment) meet requirements for the job. Save time, save manpower, save money.

Glassed steel column.

Custom-built alloy equipment



Part of a stainless steel hood, 125 ft. long.

You get the wide-range benefits of complete facilities and production skills for heat treating and fabrication of stainless steel, Hastelloy, Monel, nickel, inconel, aluminum, carbon steel and clad materials which mean savings to you.

THE PFAUDLER CO., ROCHESTER 3, N. Y.

INSTRUMENTS & CONTROLS, continued

Analyzer, Oxygen

Measures dissolved oxygen. (142A)

. . . Model 1A3B uses a standard Beckman oxygen analyzer as the keystone in giving accurate and continuous measurement of dissolved oxygen. It combines in one unit a simple physical scrubbing mechanism and analyzer. Instrument reads % saturation directly, but scales are also available calibrated in parts per million. — *Arnold O. Beckman, Inc., South Pasadena, Calif.*

Analyzer, Portable

Measures oxygen. (142B)

. . . Model C2P portable oxygen analyzer measures flowing samples or fixed volumes as small as 3 cc. Instrument operates on principle of paramagnetism to measure oxygen directly by physical means. Response is rapid—95% response to final reading within 40 sec. on standard models. Scale reads directly and may be calibrated either in percent oxygen or mm. of Hg partial pressure.—*Arnold O. Beckman, Inc., South Pasadena, Calif.*

Analyzers

Monitor quality and yield. (142C)

. . . Four plant analysis and control instruments—infrared analyzer, refractometer, ultraviolet analyzer, oxygen analyzer — for petroleum and petrochemical processing now being marketed. Developed by Phillips Petroleum Co., devices can control fractionation, blending and synthesis automatically and continuously to improve product yield and quality. Infrared analyzer measures concentration of a given component in streams of similar composition. It accommodates from one to five unknown samples plus a standard; cycle time: 1 hr. Refractometer controls fractionating tower operation, compares sample composition with that of a standard. Ultraviolet analyzer can be used for analyzing one gas stream in a butadiene purification. Oxygen analyzer operates by measuring the change in color produced when liquid reagent reacts with oxygen. Range can be set between 0-50 and 0-1,000 ppm. Analyzer output can be telemetered any reasonable distance. —*Consolidated Engineering Corp., Pasadena 8, Calif.*

Balance, Pressure

Measures precision pressures rapidly, accurately. (142D)

. . . Type 37-103 precision pressure balance, operating by dynamic force balance, overcomes disadvantages such as long response time, no convenient method of reading output, necessary tube cleaning. Small, portable electronic instrument can measure pressure in locations formerly inaccessible. Unit provides immediate readings either as differential, gage or absolute pressure. —*Consolidated Engineering Corp., Pasadena 8, Calif.*

Calibrator, Flowmeter

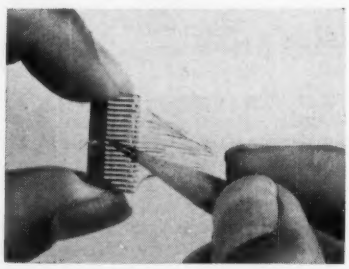
Checks incremental weight and times of flow. (142E)

. . . Flowmeter calibration system uses standard SR-4 load cell to give precise weight measurements within selected times. Range of flow rates can be checked by measuring simultaneously incremental weights and time. Unit is indicator-controller.—*Baldwin-Lima Hamilton Corp., Philadelphia 42, Pa.*

Cell, Heat-Sensing

Raises sensitivity to certain infrared rays 10,000 times. (142F)

. . . Ektron detectors offer a 10,000 fold increase in sensitivity to certain infrared rays, coupled with simplicity and adaptability to manufacture. While peak sensitivity is reached in the near-infrared zone, lead sulfide-coated glass slips are also highly sensitive to all colors of visible light and on into the ultra-violet region. Potential: automatic control of chemical processing plant operations.—*Eastman Kodak Co., Rochester 4, N. Y.*



Checker, Level

Checks fill faster and cheaper with X-ray. (142G)

. . . Hytafill level checker triples capacity and increases accuracy at half the usual investment for such equipment. It accepts or rejects 15 containers per sec. Hytafill operates by projecting a narrow X-ray beam across the conveyor, whenever a can moving away from the filling equipment interrupts its photoelectric beam. Height of X-ray beam is adjusted to desired fill level, can be set to check overfill, underfill or both. Incorrect fill alters X-ray beam sufficiently to register on a detector. Amplified detector signal triggers rejecting device which kicks off-standard container off the conveyor. There's no radiation problem because X-ray beam is small and device is completely shielded. Hytafill can check level of virtually any liquid or free-flowing solid.—*General Electric Co., X-Ray Dept., Milwaukee 1, Wis.*

HORIZONTAL PROCESSING

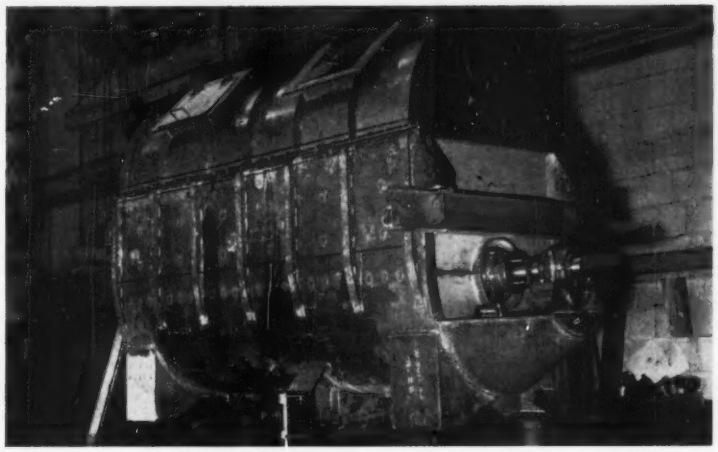
Offers Advantages

for difficult operations such as:

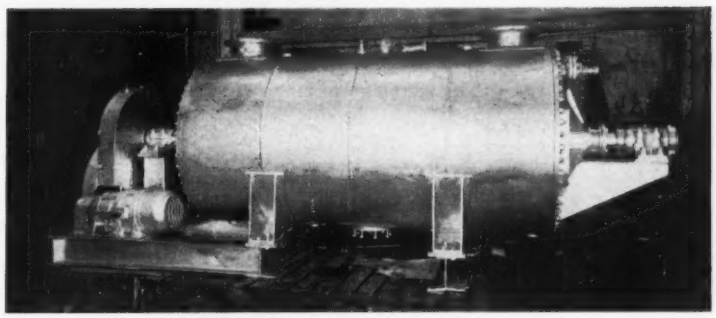
- evaporation of water and solvents from slurries, sludges, and pastes.
- drying of solids.
- reaction between gases and solids or materials of high consistency.
- sublimation.

HORIZONTAL PROCESSING UNITS
BY BETHLEHEM MEET THE DEMANDS WHICH THESE OPERATIONS MAKE FOR

- intense agitation to break up or shear material.
- circulation to blend or maintain reasonably constant composition.
- scraping at walls and plowing action for required rate of heat transfer.
- exposure and renewal of surface for contacting with gases or release of vapors.



A BETHLEHEM stainless steel unit with stud bolted steel jacket for drying a delicate solid.



A BETHLEHEM steel fabricated unit to evaporate solvents from a sludge.

BETHLEHEM has the processing know-how for many of these obscure operations plus the design background and shop workmanship to produce equipment for heavy duty, long life and effective processing.

For your processing problems involving solids and materials of high consistency, consult our engineers, who have the chemical, mechanical, and metallurgical background to help you meet your needs.

BETHLEHEM FOUNDRY & MACHINE CO.

CHEMICAL PROCESS DIVISION

BETHLEHEM, PENNSYLVANIA

INSTRUMENTS & CONTROLS, continued

Computer, High-Speed

To determine greatest efficiency for refinery operation. (144A)

. . . Mobilac computer, installed in Socony's laboratories, Paulsboro, N. J., is used to study complex operation of modern oil refinery. Mathematical model of refinery has been constructed where numbers and formulas represent processing units. Equations, punched on cards, are stored in computer's memory. Additional punch-cards containing data on operating conditions and requirements are fed into the computer. Answers on operating procedure are produced in 15 min.—*ElectroData Corp., Pasadena, Calif.*

Control, Facilities

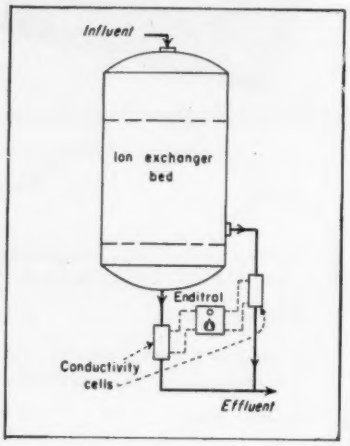
Controls electrically operated services. (144B)

. . . Central Control System follows present programs, automatically switches on or off up to 40 groups of remote service operations, each on its own time schedule. By using service machinery only when needed savings are realized in fuel, water, electrical power. System can switch lights on or off, start and stop motors, open and close valves, control air conditioning, etc.—*International Business Machines Corp., New York 22, N. Y.*

Control, Ion Exchange

For hydrogen cation exchanger, indicates end of operating run. (144C)

. . . Enditrol device determines end of operating run, can automatically initiate regeneration of hydrogen cation or highly basic anion exchanger. Overrunning, chemical and water wastages are eliminated. Unit operates by comparing acidity of effluent with water sample taken from a tap 4 to 8 in. above bottom of bed. This is done by passing two samples through conductivity cell and comparing them. Normal conductivity ratio of samples from the two points is about 1.0. But, when the exhaustion line in the bed has passed the sampling tap the ratio will jump, in favor of effluent, into the range of 1.2 to 3.0.—i. e., effluent still contains the normal amount of free acidity.—*Permutit Co., New York 36, N. Y.*



Control, Level

For boilers up to 250 psi. (144D)

. . . For use on boilers or other liquid level control jobs, new 92 series control can start and stop a boiler feed pump, interrupt current to burner if water drops to emergency level or close alarm circuit. Control features include: float-operated twin switch, beryllium-copper springs to support float arm, heat dissipation so that temperature at wiring terminals doesn't exceed 167 F.—*McDonnell & Miller, Inc., Chicago 18, Ill.*

Control Systems

Replace relay systems. (144E)

. . . Cypak static switching circuits are intended as replacements for relay systems. Since they utilize transistors and magnetic amplifiers they have no moving parts, are highly reliable. Systems are essentially digital but can be combined with analog systems where control problem warrants it. Cypak systems are competitive with relay systems and can be expected to become even cheaper with further improvements. They respond faster and run at very low power levels.—*Westinghouse Electric Corp., Pittsburgh 30, Pa.*

Control, Vibration

Protects machines from vibrational damage. (144F)

. . . Operating independently without power source or special auxiliary equipment, the model 1 Vibraswitch is used for vibration measurement or as a protective device. Installed permanently on any rotating or vibrating machine, it can prevent costly damage or material wastage when vibration becomes excessive.—*Beta Corp., Richmond 6, Va.*

Controller, Small

Designed for simple processes. (144G)

. . . With model 41A pneumatic controller, user gets sharp on-off or narrow band proportional control of variables such as temperature, pressure, liquid level and humidity. 41A controls pressure on compressors, gas receivers, heating coils in storage and process tanks.—*Foxboro Co., Foxboro, Mass.*

Controller, Temperature

For use to 600 F. (144H)

. . . Temperature controller for applications up to 600 F. uses resistance type temperature bulb and has an a.c. bridge design. Sensitivity of the instrument, exclusive of bulb, is 0.005 F. Time constant of the standard type bulb is 4 sec.—*Hallikainen Instruments, Berkeley, Calif.*

At last!

A TRUE VINYL MASTIC!

Complete protection in a single coat—10 mils thick.

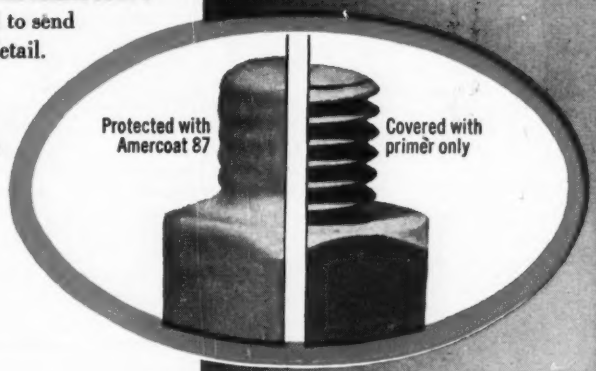
Amercoat No. 87 will cut your maintenance costs because one coat gives you the thickness and protection previously available only through the application of multiple coats.

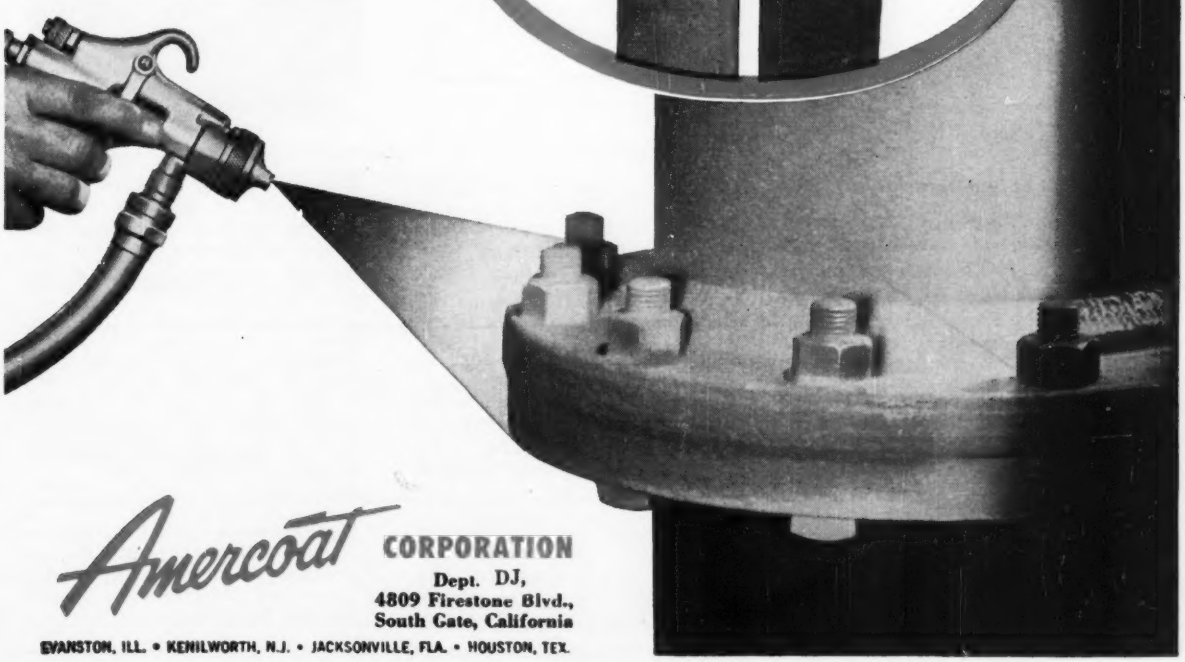
Amercoat No. 87 is the brand new solution to an old problem, for it combines the time-tested chemical and weather resistance of a vinyl with the extra thickness that was heretofore available only in conventional mastics.

Amercoat No. 87 is easily applied with standard industrial spray equipment. Only one cross-spray coat, over a primed surface, is required for complete protection. Because **Amercoat No. 87** is a true vinyl, it is not limited to black, but is available in a variety of colors.

You can save up to 50% of your labor costs with **Amercoat's new vinyl mastic No. 87.** We will be pleased to send you a bulletin describing this new coating in detail.

Notice that the sharp bolt threads, welds and sharp corners are completely protected with one coat of Amercoat No. 87—10 mils thick!





Amercoat CORPORATION
Dept. DJ,
4809 Firestone Blvd.,
South Gate, California

EVANSTON, ILL. • KENILWORTH, N.J. • JACKSONVILLE, FLA. • HOUSTON, TEX.

INSTRUMENTS & CONTROLS, continued

Controller, Thermistor

Highly stable and accurate, operates from 0 to 600 F. (146A)

. . . Series 560 temperature-indicating controller uses a thermistor sensing element, one which exhibits changes in electrical resistance with variations in temperature. In turn measurement of associated changes in voltage or current serves as a temperature indication. Because the Series 560 thermistor undergoes a 1,000-fold resistance change between 100 and 600 F., response accuracy is within 0.25% of full scale. Power source is 115-v., 60-cycle a.c. but control accuracy is unaffected at any voltage line between limits of 95 and 130 v. Control accuracy is assured even if indicating circuit should become inoperative.—*Fenwal Inc., Ashland, Mass.*

Controller, Thermostatic

Small, rugged, controls temperature of liquids. (146B)

. . . Fultrol thermostatic pilot controller operates valves, dampers, other controls to hold required temperature of liquids or air. It features rapid response and adjustable control characteristics. Instrument is installed at location where temperature is to be maintained. Temperature can be regulated in ranges from 50 to 250 F. and from 150 to 350 F. Accurate, easily read gages indicate both pilot supply pressure and control pressure.—*Fulton Sylphon Div., Robertshaw-Fulton Controls Co., Knoxville 1, Tenn.*

Controllers

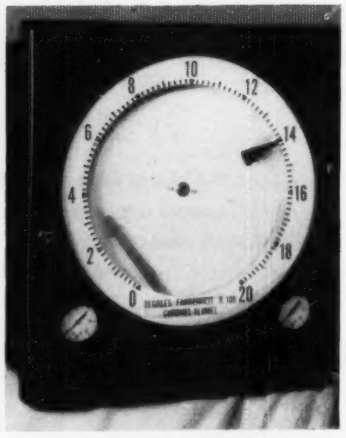
Operate electronically. (146C)

. . . Two new instrument lines are Speedomax type H controllers and series 60 proportional-control units. Both are mounted in Speedomax case when equipment is used for proportional control. Control unit is also made as separate instrument. Type H is made in single point only, and at present only for measuring temperatures using a thermocouple or resistance thermometer. Series 60 translates Speedomax measurement into correct regulating operations, is made in three types: position- and duration- adjusting, proportional control.—*Leeds & Northrup Co., Philadelphia 44, Pa.*

Controllers, Recording

Part of process instrument line. (146D)

. . . Line of process instruments includes potentiometric and a.c. bridge recorders and recording controllers. Designed for continuous measurement and control uninterrupted by periodic standardization, they incorporate new measurement circuitry and components. Features are magnetic standard in potentiometric system and bridge-balancing unit in bridge system. Models available with either electric or pneumatic control. Units expected to reduce maintenance and component replacement costs considerably. Other advantages include plug-in components, anti-backlash gearing, internal illumination and an integral pen-inkwell assembly that realigns automatically.—*General Electric Co., Schenectady 5, N. Y.*



Controls, Polymerization

Centralized for automatic control of flow and temperature. (146E)

. . . Flow of raw material, catalyst and product streams to continuous polymerization reactors is controlled automatically with centralized system. Also included in 3 by 7 ft. panel are controls for reaction temperatures. Process throughput can be regulated by one control. At the same time that the total throughput is varied, preset proportions of individual process streams are held automatically.—*Milton Roy Co., Philadelphia 18, Pa.*

Converter, D.C.-to-Air

Changes d.c. thermocouple signal to air output signal. (146F)

. . . Type T3C Thermocouple-Air Converter changes low voltage d.c. input from thermocouples and similar devices to air loading pressure of 3-15 psig. It lets users retain their pneumatic recording and controlling panel-components, yet capitalize on advantages of all-electric process control. Relationship between electrical input and air output is linear. Ranges of —50 C. to 3,000 F. are available.—*Swartwout Co., Cleveland 12, Ohio.*

Converter, Differential

Measures liquid level in pressured tanks. (146G)

. . . Differential converter-transmitter measures liquid level in tanks under pressure or vacuum. Pneumatic force-balance weighbeam system converts differential pressure into a proportionate air pressure that's transmitted to receiving indicators, recorders and controllers.—*Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia 44, Pa.*

Detector, Explosion

Guards storage vessel containing flammable liquids. ((147A)

. . . Explosion detector snuffs out incipient explosions within a fraction of a millionth of a second. Detection and counteraction are tied to infrared radiation generated by the high-speed combustion. Detector can also be used within confined areas where there's no ambient infrared radiation. Complete self-contained system consists of one detector and one or more plastic containers. Applications under way include fuel storage tanks, pumping stations and similar areas.—*Electronic Corp. of America, Cambridge 42, Mass.*

Elements, Load

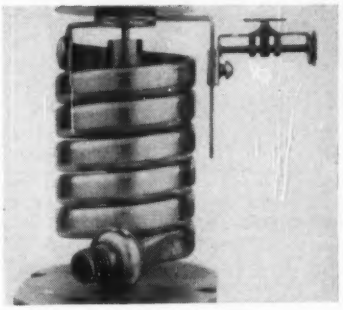
Measure tension, compression or force. (147B)

. . . Series of redesigned and highly sensitive volumetric load-measuring elements are available for wide range of applications. Measuring tension, compression or force, elements average 99% accuracy, aren't affected by hysteresis or friction in the loading system. Four types are provided: spool, ring, diaphragm, capsular.—*Taylor Instrument Co., Rochester 1, N. Y.*

Elements, Pressure

Have greater operating power, accuracy. (147C)

. . . Pressure recorders equipped with Series 200 pressure elements have improved measuring characteristics for low and high pressure range. Elements for low ranges (10 in. water to 10 psi.) are specially formed and constructed with free-floating design to give greater power, strength, straight-line travel. Elements for high pressures (above 10 psi.) employ a pivotless and arborless construction that transmits springpower to the pen mechanism with much less friction loss.—*Foxboro Co., Foxboro, Mass.*



Flow Meter, Magnetic

Built for larger lines to meter unlimited flows. (147D)

. . . Incorporating all the advantages of electromagnetic flow metering, new instrument measures unlimited maximum flows in 2 to 8 in. lines. Results aren't affected by pressure, viscosity, density or changes in conductivity of liquid flowing. Unit is recommended for aqueous solutions, acids, slurries. In order for the meter to function, specific conductance of flowing liquid must be approximately 200 micromhos or more. Output is linear and directly proportional to the average velocity of the flowing liquid which, in turn, is proportional to volumetric flow rate.—*Foxboro Co., Foxboro, Mass.*

Gage, Electronic Tank

Uses servo-operated probe to measure level within $\pm\frac{1}{16}$ in. (147E)

. . . Twice the accuracy of previous automatic or hand gaging methods is claimed for Gilbarco electronic tank gage. Measurements are uniformly accurate because there is no float to be affected by variations in specific gravity. Also variations in sheave friction have been nullified.—*Gilbert & Barker Manufacturing Co., West Springfield, Mass.*

Gage, Thickness

Measures continuous running strip of material. (147F)

. . . Beta gage is designed to measure weight per unit area or thickness of a sheet or strip continuously without physical contact. It can be used on plastics, rubber, textiles, paper. Cage operates by emitting beta rays from radioactive isotopes. Variation in absorption by sheet material gives measure of weight or thickness changes. Alarm is actuated if predetermined limits are exceeded.—*Curtiss-Wright Corp., Woodridge, N. J.*

Gages, Density

Based on radioactive absorption. (147G)

. . . Model PS series density gages measure and control percent by weight of solids or liquids in slurries. Gages rely on radioactive absorption and Ohmart cells for measuring, can be mounted external to the system where they can't be harmed by slurry conditions. PS gages have high sensitivity and precision. They're used on water slurries of asbestos cement, magnetite, clay, grinding compounds, coal, etc.—*Ohmart Corp., Cincinnati 22, Ohio.*

Housing, TV Camera

Protects camera from cold, heat, rain, snow. (147H)

. . . All-weather aluminum housing makes possible installation of industrial cameras out-of-doors, in hazardous plant locations, at unsafe test areas. Tripod-mounted insulated box has thermopane window equipped with remote-controlled windshield wipers on both inside and out. Electric ribbon heaters, mounted inside box walls are turned on thermostatically when temperature drops below 40 F.; above this temperature, fan goes on automatically. Typical uses: remote traffic control in railroad yards, safe-distance regulation of hazardous operations such as is found in chemical plants and in nuclear research.—*Tenney Engineering Co., Union, N. J.*

INSTRUMENTS & CONTROLS

Hygrometer

Determines relative humidity. (148A)

. . . This hygrometer determines relative humidity by measuring the electrical resistance of a carbon film. The time lag is less than one second at room temperature. Performance is essentially independent of temperature from 0 to 40 C.—*Arthur D. Little, Inc., Cambridge, Mass.*

Hygrometer, Dew Point

Checks sample flow for dew point. (148B)

. . . Dew point temperatures can be measured within 1 deg. C. over a range from 18 to —50 C. using the 900-1 dew-point hygrometer. Instrument handles continuous flow of sample between 500 and 2,000 cc. per min. at pressures between ½ and 1½ atm.—*Burton Mfg. Co., Los Angeles 64, Calif.*

Indicator, Level

Explosion proof. (148C)

. . . Level indicator uses standard Telstor electronic unit that measures mass or level of liquids, viscous fluids, powders and granular solids. It's available in several combinations to suit different applications.—*Fielden Instrument Div., Robertshaw-Fulton Controls Co., Philadelphia 33, Pa.*

Indicator, Level

For use on dangerous liquids. (148D)

. . . Stromberg safety liquid-level indicator can be used on containers holding liquid chlorine and ammonia; on sulfite digesters, stills and steam boilers. And, if desired, can be automatized for remote indication, alarm or regulation.—*A. Ekstorems Machinery Co., Stockholm, Sweden.*

Indicators, Remote

Accuracy: 1 part in 2,000. (148E)

. . . Remote indicators and recorders precisely follow the prime-mover dial of an automatic weight scale. Instrumentation is built around a 60-cycle servo system; can be used with any industrial scale dial. Any number of indicators can be run by one prime mover.—*Richardson Scale Co., Clifton, N. J.*

Ink, Recording

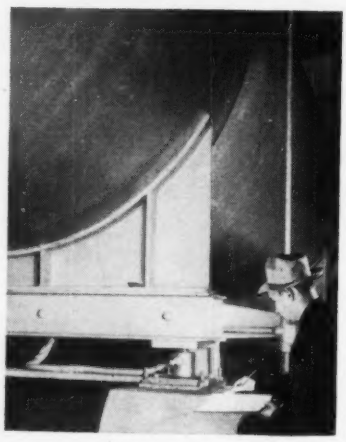
Smooth flowing. (148F)

. . . Recording ink furnished in one-ounce squeeze bottle with capillary tube and filter assembly dries quickly without feathering. The ink performs well over a wide temperature range.—*Foxboro Co., Foxboro, Mass.*

Instruments, Load-Cell

Control handling of liquified gas. (148G)

. . . Freon propellant for home-product dispensers is handled from tank car to storage to packaging line with minimum evaporation and leakage losses. Two small SR-4 compression-type load-cells under each of two 15,000-gal. storage tanks keep close check on liquefied gas supply. Two low-cost PTL weight indicators on pump control board report storage inventory during unloading of tank car. Pump stops automatically when tank contains 13,500 gal. Recorders back of filling line show rate of consumption, that may run up to 5,000 lb. per hr. This continuously recording and weight-indicating system has been installed at Stanley Home Products plant in Easthampton, Mass. —*Baldwin-Lima-Hamilton Corp., Philadelphia 42, Pa.*



Logger, Automatic Data

Converts signals into digital records. (148H)

. . . Automatic data logger permits automatic control, computing, cost accounting, statistical analysis or process reset with a punch card programmer. Process data are recorded automatically in vertical column on the log sheet. Simultaneously, identification digits for each variable are punched on a tape in convenient form for computations. Logger's memory units can hold—until read-out—data recorded sequentially over a period of time. Between periodic read-out cycles logger scans and monitors all variables continuously. Abnormal conditions which may turn up are recorded as they occur.—*Fischer & Porter Co., Hatboro, Pa.*

Meter, Density

Indicates, records, controls automatically. (148I)

. . . Nuclear-electronic Densi-O-Meter measures density of material flowing through pipeline continuously. Meter operates on null-balance principle to give readings to third decimal place. Measurement depends on absorption of gamma rays by material under observation. Absorption increases with density. —*Sierra Industrial Instrument Co., San Francisco 7, Calif.*

Meter, Flow

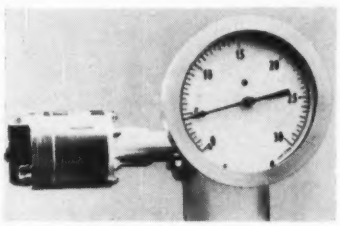
For hazardous atmosphere. (149A)

. . . Explosion-proof Electricontact meter—for measuring predetermined quantities of liquid—consists of a standard Niagara meter plus a register containing an electric switch. It will complete an electric circuit after a predetermined quantity of liquid has passed through the meter. Explosion-proof construction is available on four basic groups of Niagara meters: for cold water and water-base liquids; heated water and water-base liquids; oils and solvents; corrosive chemicals. After the meter is completely assembled and connected electrically, switch closing points can be adjusted through an access plate on the rear of the register. Manufacturer claims price of meter is moderate.—*Buffalo Meter Co., Buffalo 14, N. Y.*

Meter, Flow-Rate

Measures rates of corrosives, noncorrosives. (149B)

. . . Flow-rate meter, accurately measuring quantity rate of liquids and gases, combines features of differential orifice and variable-area meters. Sizes are built for pipelines from 2 to 12 in. to measure flow rate from 0.2 to 2,000 gpm. of liquid; 10 to 60,000 lb. per hr. of steam; or 1 to 6,000 cfm. of gas. —*Devicengineering Co., Philadelphia 3, Pa.*



Meter, Gas Flow

Offers stable measurement and control. (149C)

. . . With Critiflo-Meter only one pressure tap is needed. Instrument measures and controls flow of steam and other gases, proportions and allocates steam to individual units or departments and proves out other flow-measuring devices. Simple construction requires only two parts: a housing containing a nozzle of chrome carbide or hardened stainless steel and a flow indicator connected to the housing. Because of its construction, instrument needs little maintenance.—*King Engineering Corp., Ann Arbor, Mich.*

Meters, Specific Gravity

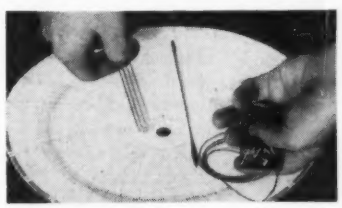
Measure and control solutions, slurries. (149D)

. . . Line of bubbler-type specific gravity meters can be calibrated directly in terms of specific gravity, Twaddell units, degrees Baume or other appropriate units. Used with any liquid where a bubbler pipe can be inserted they are factory-calibrated for the liquid being measured. Meters and recorders can be equipped with automatic controls.—*Bristol Co., Waterbury 20, Conn.*

Pen, Recording

Has sealed ink supply which lasts a year. (149E)

. . . Recording pen speeds data interpretation and relieves skilled personnel of monotonous jobs. Sealed inking system prevents sludge and oxide formation, is contamination-proof, non-corroding, non-evaporating and delivers uninterrupted flow of fresh ink. Four pens trace on parallel arcs.—*Bailey Meter Co., Cleveland 10, Ohio.*



Receiver-Integrator

Totalizes process flow on counter. (149F)

. . . Type 224, a pneumatic-electric instrument developed for graphic panels, gives accurate and continuous total of any process flow. Integrator consists of two small, self-contained units: remote counter and flow receiver. Counter can totalize to 8 digits; flow receiver has bellows and cam-switch assembly. Units are now available for uniform or square root scales to totalize rates by the minute, hour or day.—*Foxboro Co., Foxboro, Mass.*

Receiver, Pneumatic

Standardizes multiple recording. (149G)

. . . From 1 to 4 identical units of a pneumatic receiver can be mounted in the manufacturer's receiver-recorder. Unit receives pneumatic signals transmitted from a measured variable and drives a recording pen. Plug-in, pin-positioned construction and indexed driver arm make possible multiple installation. Receiver is factory calibrated to less than $\pm\frac{1}{2}\%$ of range span, is sensitive to signal changes of 0.01 psi. Ambient temperature changes between 30 and 130 F. are compensated by an isoelastic spring. Any hysteresis error is negligible.—*Bailey Meter Co., Cleveland 10, Ohio.*

Recorder, Heat

Controls rate-of-heat input or output. (149H)

. . . Dynamaster Btu. recorder-controller systems give fast, continuous measurement and control of rate-of-heat input or output. Heat flow can be regulated for process vessels, refrigerating plants, air conditioners and wide variety of other heat-exchanging devices.—*Bristol Co., Waterbury 20, Conn.*

INSTRUMENTS & CONTROLS, continued

Recorder, Strip-Chart

Uses new amplifier to increase reliability. (150A)

. . . In the Marksman potentiometer, strip-chart recorder there are no vacuum tubes. Amplification is done entirely by high performance magnetic amplifiers. New amplifiers make recorder resistant to vibration. Instrument has fewer moving parts; wear has been reduced to minimum. Operation isn't affected by lead length variations. Recorder has six chart speeds—changed by moving a lever.—*West Instrument Corp., Chicago 22, Ill.*

Regulator, Air

Adjustable. (150B)

. . . Adjustable air regulator provides reliable, drift-free source of clean, dry air for instrument service or air-regulated equipment. Flow capacity up to 15 cfm., maximum inlet pressure 150 psi., automatic relief and efficient water separation.—*Kendall Controls Corp., Waltham, Mass.*

Regulator, Safety

Stops flow when preset temperature is reached. (150C)

. . . For protection against over-temperature conditions Stacon VS safety regulator instantaneously stops flow of gas or steam to heating elements when temperature reaches the set point. It will control temperatures between 25 and 325 F. with 50° F. range adjustment. Inlet pressure limit is 100 psig. Available sizes: ¼ to 1¼ in.—*Farris Stacon Corp., Palisades Park, N. J.*

Sampler, Aerosol

Completely collects dust, smoke, fogs, mists. (150D)

. . . Weighing less than 5 lb. and sampling up to 50 cc. per min., Konisampler is high-efficiency device for particulate matter. It's used on very accurate as well as less exacting applications. Laden air is drawn between hot surfaces and a relatively cooler one. Particles deposit on cooler surface, a glass slide. They then can be examined visually, optically, chemically, microscopically.—*Joseph B. Ficklen, Pasadena 7, Calif.*

Scanner

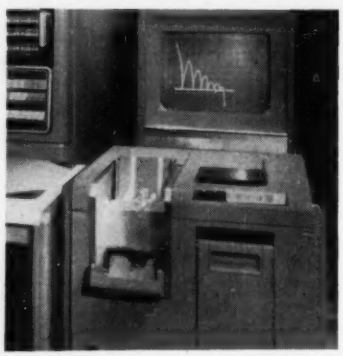
Repeatedly checks a number of process steps. (150E)

. . . Indicating scanner monitors a variety of process variables involving level, temperature, thickness, mechanical movements, tolerances, weight and pressure. It will keep a steady check on 6, 12, 24, 48 and more steps in a manufacturing process. When a point being checked strays beyond the preset control zone, the scanning stops at that point and actuates an alarm or flashes a signal. Indicator dial shows extent of deviation.—*Fielden Instrument Div., Robertshaw-Fulton Controls Co., Philadelphia 33, Pa.*

Screen, Electronic

Presents results from giant calculator. (150F)

. . . Type 740 cathode-ray-tube output recorder is designed for use with type 701 and 704 electronic data processing machines. It includes a 21-in. cathode ray tube for immediate visual display and inspection of data being computed by the 701 or 704; and a 7-in. tube operating in conjunction with a 35-mm. camera as a recording unit. By use of appropriate instruction or programming techniques in the computer, all cathode-ray-tube displays and operations of the camera are completely automatic and under control of the computer.—*International Business Machines Corp., New York 22, N. Y.*



Spectrometer, Mass

Cycloidal focusing extends sensitivity, range. (150G)

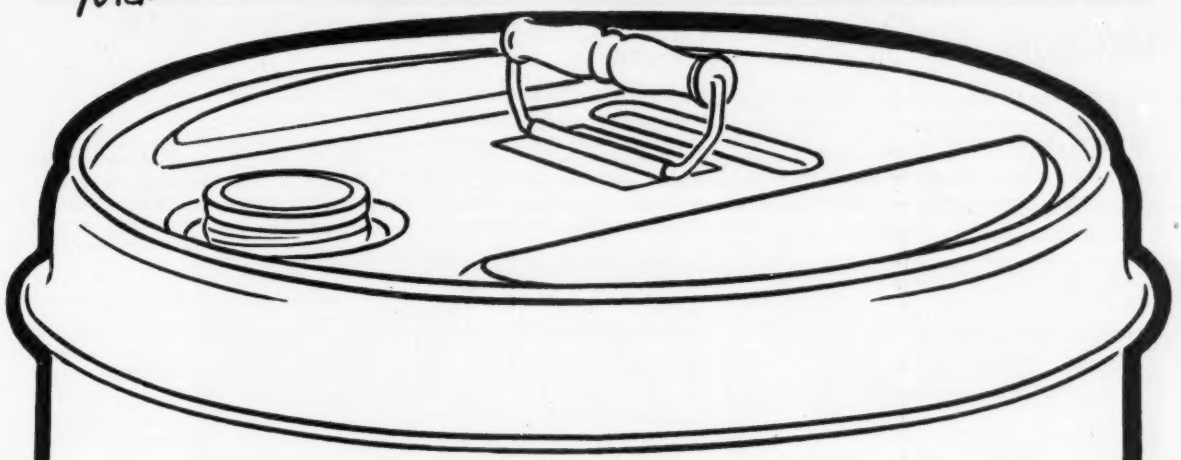
. . . Cycloidal focusing feature of 21-620 mass spectrometer makes possible analysis of gaseous and light liquid mixtures with high-speed accuracy comparable to larger instruments. It permits quantitative separation by mass spectrometry from mass 2 through 150 —and scanning to mass 180. Pen and ink recordings of spectra show as peaks the distribution and relative quantity of ions resulting from conventional electron bombardment. Peaks are sharply defined.—*Consolidated Engineering Corp., Pasadena 8, Calif.*

System, Measuring

Records without complex electronics. (150H)

. . . Heart of ElectroSyn pressure and temperature measuring system is signal generator that's been tested and proved in military servo systems. It's explosion proof, has high output without amplification, isn't affected by vibration or line voltage changes and can withstand pressure overload up to 100%. Signals can be transmitted over distance using line or microwave facilities.—*Controls Div., Control Engineering Corp., Norwood, Mass.*

Make friends with Continental's steel containers



ICC-approved closed head
STEEL DRUMS

The fact that Continental closed head steel drums meet Interstate Commerce Commission specifications for shipping inflammable and other dangerous articles is important. Continental packaging, however, offers your products far more than rugged protection. Brightly lithographed with your name or trade mark, each container in your line becomes part of a handsome "package" family. And because customers find these cans so suitable for re-use, your sales story will keep on making good impressions for years. Let us show you how Continental drums can work for you. Call soon.

Why not order "Tripletite" paint cans, "F" style, and conventional cans when you order steel containers. We'll send them along in one freight car to shave your costs on warehouse space, shipping and inventory.

Continental makes a complete line of lug cover, flaring pails, and utility containers. Whatever your product, you'll find sizes and styles to suit your individual needs.

FOREMOST IN QUALITY AND DESIGN

Made from heavy 24- or 26-gauge steel, Continental closed head drums have a capacity of 5 U.S. gallons. Meet ICC specifications 17E and 37D. High-strength body available with straight sides or top and bottom beads. Drum top offset for easy stacking. Construction features include electric lap-weld side seam, and compound-lined, double-seamed head and bottom. Four-finger handle securely welded to top for safe handling.

Also the tops in pouring spouts and closures

CONTINENTAL CAN COMPANY

Eastern Division: 100 E. 42nd St., New York 17
Central Division: 135 So. La Salle St., Chicago 3
Pacific Division: Russ Building, San Francisco 4

Our Fiftieth Year of Tailor-Made Packaging

TAILOR-MADE PACKAGE SERVICE

INSTRUMENTS & CONTROLS, continued

System, Telemeter

Not affected by varying signal level. (152A)

. . . Based on principle of impulse duration, Teletax telemeter system can tolerate wide variations in signal level without impairing operation or accuracy. System consists of a transmitter, receiver and power pack to furnish electrical energy for transmitting the signal. Duration of the signal transmitted every 12 seconds is proportional to variable being measured by conventional elements. Automatic synchronization keeps transmitter and receiver accurately coordinated.—*Foxboro Co., Foxboro, Mass.*

System, Telemetering

Uses pulse code for error-free transmission. (152B)

. . . In Varec pulse-code telemetering system pre-arranged code is used for each increment of intelligence transmitted, thus giving error-proof transmission. Transmitter sets up code for particular value of liquid level (or other information), then transmits this to the receiver. At the receiver, incoming code is translated into equivalent measurement increment. Receiver output can be fed into printing equipment to give permanent record of readings.—*Vapor Recovery Systems Co., Compton, Calif.*

Tester, Hardness

Analyzes and records the hardness of water. (152C)

. . . Precise analytical method enables LeMag Durometer to determine continuously the hardness of effluent water from sodium zeolite, ion exchange and hot process softeners. It can also monitor other constituents in water, e.g. phosphate, silica, sugar, chlorine. Automatic colorimetric titrations performed by the Durometer are possible through the most recent advances in analytical procedures.—*Milton Roy Co., Philadelphia 18, Pa.*

Thermistor

Stable at high temperatures. (152D)

. . . Type L 118 thermistor combines high-speed response with extreme stability at high operating temperatures. It's rated for a maximum continuous temperature of 300 C., has good stability to 400 C. Thermistor's glass-coated ceramic element is less than 0.018 in. in dia. with 1 mil dia. platinum alloy leads. Thermal time constant of unit is only one second in still air, less in liquid.—*Thermistor Corp. of America, Metuchen, N. J.*

Thermocouple

Gives extremely fast respouse. (152E)

. . . Rugged thermocouple measures rapid temperature changes of metal wall surfaces. It's been tested satisfactorily up to 60,000 psi. under severe mechanical vibration. Plating of 1 micron thickness at the junction minimizes response time of instrument when temperature changes. Within $\frac{1}{4}$ micro-second junction temperature reaches about $\frac{3}{4}$ the amplitude of a stepchange of the exposed surface. Two models are available: small—for thin walls, large—for thick walls.—*Midwest Research Institute, Kansas City, Mo.*

Totalizer, Electronic

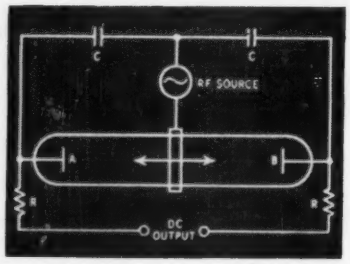
Controls flow, records weights of carload lots. (152F)

. . . ETS-7, an "analog-to-digital converter," can be adapted to any industrial scale. It takes the analog reading of a scale, converts it to numerical form and feeds it to a printer. So far installations have been limited to receiving operations. But unit can be used in processing operations.—*Industrial Electronic Engineers, North Hollywood, Calif.*

Transducer

Gives output voltage variable with motion. (152G)

. . . T-42 transducer, based on gas-discharge tube, can be used where little or no mechanical force or inertia is available for dissipation in the measuring device. It can convert a physical displacement or appropriate impedance change into a corresponding electrical signal. Its characteristics are high sensitivity, excellent linearity and resolution, high output levels, good response.—*Decker Aviation Corp., Philadelphia, Pa.*



Transmitter

Transmits electrical signals pneumatically. (152H)

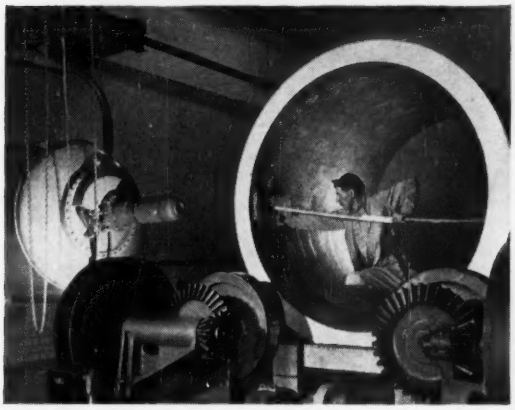
. . . Electrical output signals from sensing elements can be transmitted as pneumatic signals to receiver instruments by using the Foxboro EMF/Pneumatic transmitter. It converts d.c. voltage input signal into a proportional pneumatic output signal of 3 to 15 psi. For certain electrochemical measurements an extra high-impedance device such as the Beckmann model W amplifier must be used. The d.c. signal output from the amplifier then can be fed into the transmitter.—*Foxboro Co., Foxboro, Mass.*

Process Equipment that meets *TODAY'S* Requirements

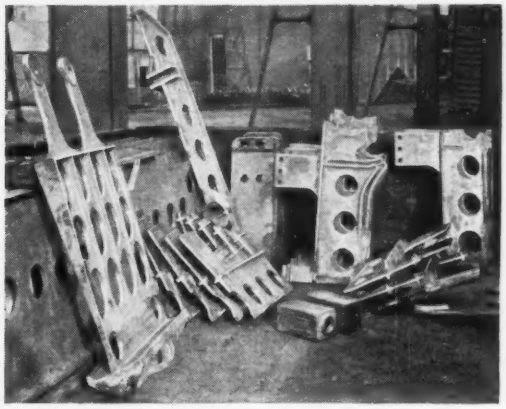
B&W Accumulators • Alloy Castings • Hollow Forgings

The constant progress being made within the process industries demands the utmost of the engineers responsible for the dependability, efficiency and economy of the equipment that serves today's process industries' requirements.

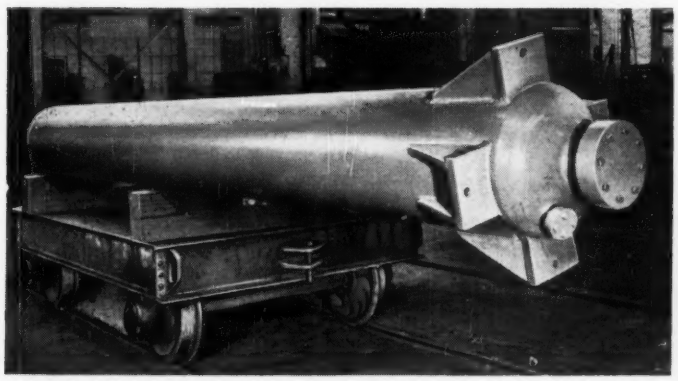
At B&W, forming, machining, welding, X-raying and stress relieving are all performed on equipment specially designed for the job, much of it developed by B&W. And for temperature and pressure problems that arise, new and practical solutions are continually being developed through designing skill based on long experience.



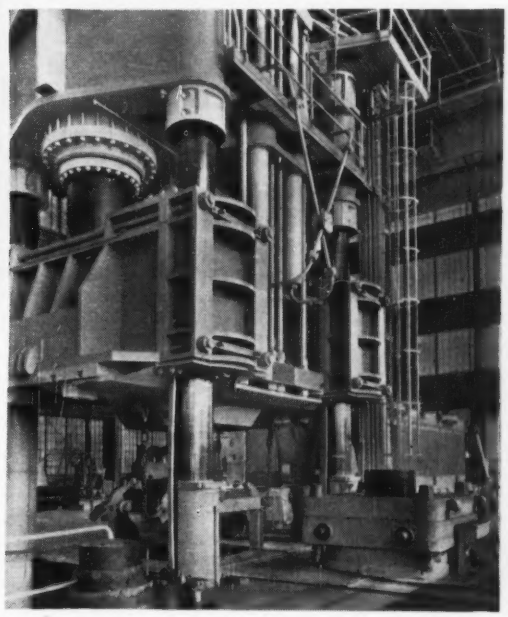
2,000,000-volt X-ray is the all-seeing eye that checks the soundness of welds.



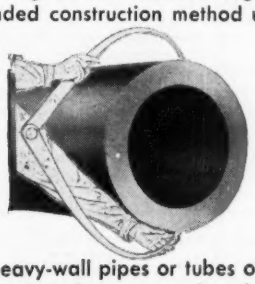
B&W Alloy Castings are cast-to-last . . . designed for long life under the most rigid service conditions requiring superior resistance to abrasion, corrosion, oxidation, high pressures and high temperatures.



B&W Accumulators are manufactured in the range from 500 to 6000 psi or higher, with capacities from 5 gallons to 10,000 gallons. Large accumulators designed to withstand higher pressures are fabricated by the banded construction method unique with B&W.



B&W's giant new press, used in making Hollow Forgings, and other products needed to meet industry's growing demands.



These large-diameter, heavy-wall pipes or tubes offer the designer the advantages of single lengths or many lengths, "tailor-made" to his requirements . . . prompt delivery even on small orders . . . full forging properties resulting from thorough working of the metal . . . excellent concentricity . . . wide size range available. Supplied in a wide range of carbon and alloy steels.

Write for detailed information about the B&W equipment you need to keep your plant in best condition to meet today's competition. The Babcock & Wilcox Company, Process Equipment Department, Barberton, Ohio.

BABCOCK & WILCOX

S-432

INSTRUMENTS & CONTROLS, continued

Transmitter, Pneumatic

For telemetering and control systems. (154A)

. . . Universal transmitter transmits measurements of flow, level, pressure, temperature, draft differential and vacuum. Measuring element actuates micro-sensitive vane, nozzle and booster assembly. Measured variable and pneumatic signals are indicated in common scale. Transmitting distances: 1,000 ft. to receivers, 400 ft. to controllers. Transmitter's accuracy is within ½% of measured range span.—*Bailey Meter Co., Cleveland 10, Ohio.*

Transmitter, Pressure

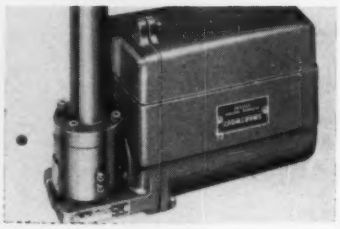
For chemical processing. (154B)

. . . Pressure transmitter, strain-gage type, has stainless steel pressure chamber and acid resistant seals. Teledyne transmitter gives maximum response to dynamic pressures—e.g. vibration, pulsation, etc.—yet is insensitive to disturbance.—*Taber Instrument Corp., North Tonawanda, N. Y.*

Transmitter, Pressure

Measures pressure at high temperature. (154C)

. . . Electrical-output pressure transmitter produces electrical signal proportional to pressure at high temperature. It's particularly suited for polymers, asphalts, slurries, molten metals, viscous fluids that solidify when stagnant. Changes in temperature of the process fluid don't affect the output signal.—*Swartwout Co., Cleveland 12, Ohio.*



Viscometer

Gives accurate results for long period of time. (154D)

. . . Rotational viscometer relates time and temperature to thixotropy, dilatancy and yield value. Instrument can be operated manually or adapted for automatic process control; can provide automatic proportional or integral regulation of viscosity. Through connection to a recorder, process can be regulated with compensation for temperature. Standard models cover range from 0.2 to 3,000,000 centipoises.—*Drage Products, Union City, N. J.*

• Maintenance Tools and Supplies

Cleaner, Drum

Reconditions before repainting. (154E)

. . . Operating like a revolving door, machine cleans drum surfaces by abrasive blasting prior to painting or coating. On closed-end drums only exterior is cleaned; on open-end drums both interior and exterior together with lid are blasted. Portion in center of machine keeps blasting zone enclosed.—*American Wheelabrator & Equipment Corp., Mishawaka, Ind.*

Coating, Mastic

Used over insulation, permits breathing. (154F)

. . . Designed to permit passage of entrained moisture through the coating, Erkote 6X mastic—a cut-back asphalt—can be used over all types of insulation on heated equipment. It has excellent resistance to most acids, alkalis, hot moist vapors. After reasonable curing time, Erkote 6X will not support its own combustion.—*Earl Paint Corp., Utica 2, N. Y.*

Coating, Protective

Neoprene base, brushed or sprayed. (154G)

. . . Magic-Vulc neoprene maintenance coating No. 245-B is tough, adherent protective coating resisting oils, alkalis, sunlight, sea water. Applied directly from can, coating dries within 2 hours to dry film thickness of 5-10 mils. 245-B adheres to metal, concrete, wood, plastic, glass. It's used as protection for steel structures, anti-skid coating, formed-in-place gaskets, repairing worn conveyor belts.—*Magic Chemical Co., Brockton, Mass.*

Coating, Protective

Protects concrete against fluorine attack. (154H)

. . . Concrete can be protected from inroads of fluorides, HF and HF solutions by applying ⅛-in. layer of Ceilcrete "B." It's a thermosetting plastic-base surfacing with high density and stonelike hardness. Aside from acid resistance it withstands impact and abrasion. In many applications Ceilcrete "B" has replaced brick.—*Ceilcote Co., Cleveland, Ohio.*

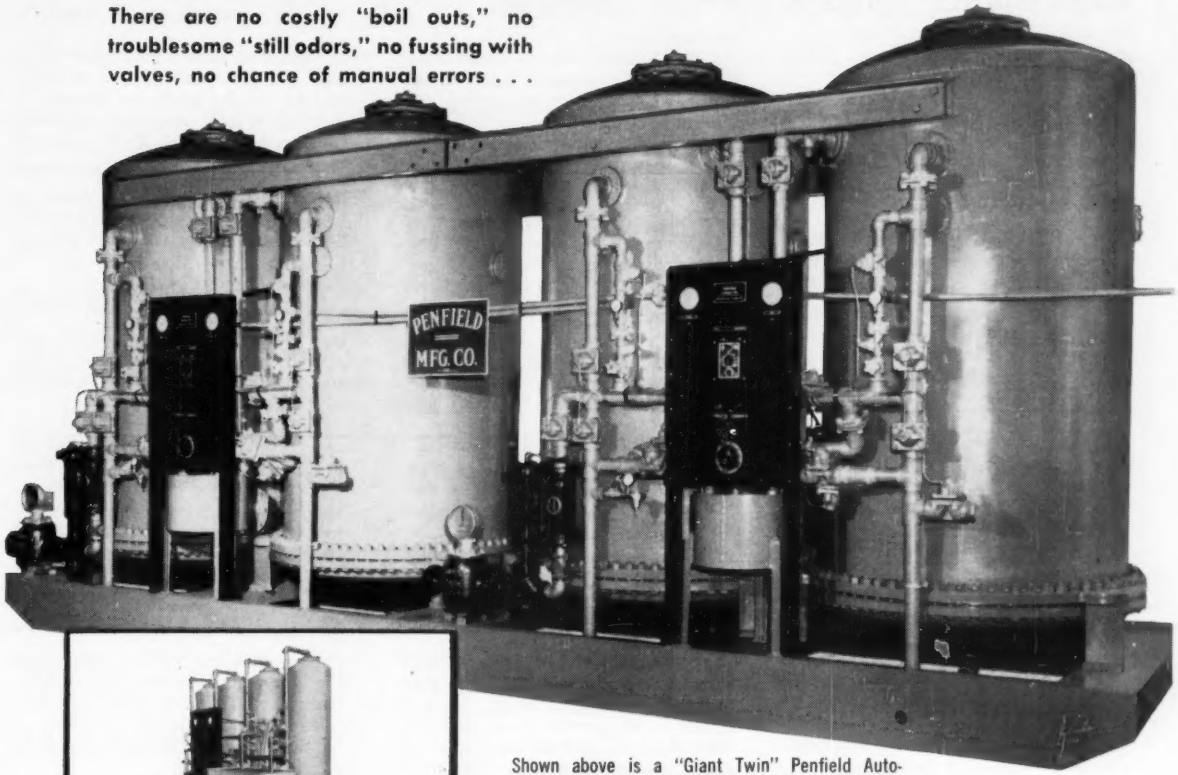
Electrode, Welding

Joins dissimilar high-nickel alloys. (154I)

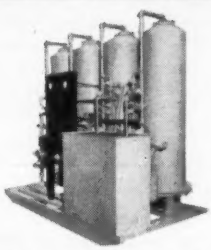
. . . Welding electrode, NiTectic 222, joins austenitic stainless steel to nickel or to Inconel, cast alloys to steel, etc. NiTectic will fabricate and repair metals—regardless of composition—with quiet transfer and lack of spatter.—*Eutectic Welding Alloys Corp., Flushing, New York, N. Y.*

KING SIZE *or REGULAR*

There are no costly "boil outs," no troublesome "still odors," no fussing with valves, no chance of manual errors . . .



Shown above is a "Giant Twin" Penfield Automatic Demineralizer (capacity 7,200 GPH) recently installed in a new General Electric Company plant at Appliance Park, Louisville, Ky.



Model A-1000 Penfield Four-Column Demineralizer (capacity 1,200 GPH). Whatever design and capacity Penfield Demineralizer is desired, each unit is available equipped for completely automatic operation — including activation of the regeneration cycle, recutting in effluent, and refilling the regenerative tanks.

Model M-100 Penfield Mono-Column Demineralizer (capacity 90 GPH). Each Penfield unit, whether of mono- or multi-column design, is completely "packaged" — requires only simple connection to service lines to start delivering its full rated capacity of super high purity process water.

Penfield Demineralizers Supply Highest Purity Water at Lowest Cost — *Completely Automatically*

Demineralization with the latest available resins can remove all types of impurities, ionizable and non-ionizable, including minerals, organic gases and even bacteria — with an efficiency* that's truly a modern miracle.

And now Penfield Demineralizers may be secured in any capacity you require: 90 GPH, 200 GPH, 2,000 GPH and up — each completely "packaged" unit equipped to perform all its operating functions, including the regenerating cycle, entirely automatically.

There are no valves to turn and only a minimum of "check-up" supervision is necessary. All steps in the regenerating cycle — from activation to rinsing, recutting in effluent when desired resistivity (purity) is reached, and even refilling the regenerative tanks with fresh water — are completely *automatic*.

You owe it to your product, your process *and* your balance sheet to be up to date on how Penfield Automatic Demineralizers can serve you. Write today, specifying your approximate gallonage requirements.

* Purity in excess of 20,000,000 ohms is routine performance for Penfield Demineralizers. National average chemical cost for Penfield demineralized water is less than 20¢ per 1,000 gallons.

Penfield

MANUFACTURING COMPANY, INC.
19 High School Ave., Meriden, Conn.

The Pioneer Manufacturer of Industrial Demineralization Equipment

MAINTENANCE TOOLS & SUPPLIES, continued

Grease, Vacuum

Serves as a lubricant, seal on vacuum systems. (156A)

. . . Mo-Silicone vacuum grease combines chemical inertness and excellent temperature-viscosity relationship of silicone liquids with outstanding lubricating qualities of molybdenum disulfide. Grease seals tightly against both high and low pressure, acts as lubricant for moving parts, can be used as seal and thread compound.—*Lockrey Co., Southampton, N. Y.*

Gun, Metallizing

Has wide-range flexibility, for hand operation. (156B)

. . . Turbo-Jet metallizing gun can work on production, maintenance or application of corrosion-resistant protective coating to give extremely fine, dense coating. It sprays both hard and soft metals without need for changing worms, gears or feed rolls. And it uses high- or low-melting wire from 20 gage to $\frac{3}{16}$-in. dia.—*Metallizing Co. of America, Chicago 24, Ill.*

Gun, Welding

Light weight, fast acting. (156C)

. . . Accurate control valve on 14-oz. electric, hot-gas welding gun regulates flow of hot compressed gas to obtain correct temperature. Gun can weld rigid polyvinyl chloride, polyethylene, acrylics, soft vinyl sheeting.—*Industrial Plastics Div., Seelye Craftsmen, Minneapolis, Minn.*

Kit, Splicing

Makes factory-perfect splices in field. (156D)

. . . Scotchcast kit is used to make tough, plastic-jacketed splice of an electrical cable. Only minutes are needed to complete the electrical leakage-, moisture- and corrosion-proof splice. Each kit makes one complete splice and includes Scotchcast resin and hardener in the Unipak container; 3-piece vinyl-plastic, single-use mold; 2 different-size Scotchlok electrical spring connectors; strip of abrasive cloth for cleaning the conductor; and an instruction sheet.—*Minnesota Mining and Mfg. Co., St. Paul 6, Minn.*

Kit, Weld Inspection

Detects surface cracks, one-man operation. (156E)

. . . Magnaflux Y-5 yoke kit warns of surface cracks in new welds or old parts suspected of fatigue failure. Because it uses a.c. magnetization, no confusing sub-surface indications will be developed. 7-lb. yoke can be positioned and power controlled with one hand while the other dusts on Magnaflux powder. Area covered by each application of the yoke varies up to approximately 24 sq. in.—*Magnaflux Corp., Chicago 31, Ill.*

Lance, Percussion

For low-cost, fast cleaning of boiler tubes. (156F)

. . . Airnesco boiler cleaning Percussion Lance frees tube surfaces—in flame or water tube boilers, economizers, air preheaters—from soot, ash or clinker. Lance operates on compressed air or steam, producing 1,500 pulsations per min. In fire-tube boilers, insert lance six inches into tube, then release three or four bursts to clean entire inner surface. It cleans 300-tube waste heat boiler in 30 min.—*C. F. Carpenter, Allentown, Pa.*

Packing, Sheet

Gives tight seal up to 400 F. against acids. (156G)

. . . Sheet packing R/M 1307, of white asbestos fibers impregnated and coated with an acid-resisting compound, can be used against sulfuric, nitric and other acids in various concentrations where a tight seal is needed up to 400 F. Packing has higher tensile strength and better flexibility than others of its type.—*Packing Div., Raybestos-Manhattan, Inc., Manheim, Pa.*

Patching, Floor

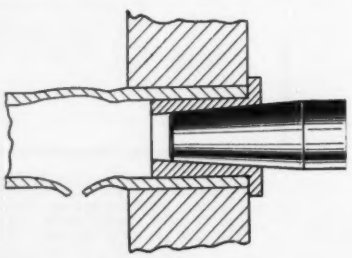
Sets in minutes; gives smooth, tough surface. (156H)

. . . Kwik-Roc powder patches cracks and holes in concrete floors quickly (45 min.) and permanently. Patch has more than twice the compressive strength of average floor concrete. Powder is mixed with water, then poured into clean crack. It's not recommended for resurfacing entire floor areas, for interior floors constantly wet or subject to spillage, for exterior surfaces.—*A. C. Horn Div., Sun Chemical Corp., Long Island City, N. Y.*

Plug, Tube

Seals off leaks in condenser tubes. (156I)

. . . Small tube plug eases headaches encountered with condensers and heat exchangers. Plug consists of brass bushing with collar that fits closely in the tube and tapered steel plug that's driven into the bushing. Bushing is parallel to tube and tube sheet. As tapered plug enters, it expands the bushing to fit tightly. Contact is complete between tube and sleeve because expansion is parallel.—*Lagonda Div., Elliot Co., Springfield, Ohio.*



Primer, Rusty Metal

Eliminates need for sandblasting. (157A)

. . . KIP 100, rusty metal primer, provides excellent bond for topcoating paint film. It converts the oxide film into absorbent, inert and stable phosphates; paint is applied directly over phosphate coat. Primer inhibits further rust formation.—*Emjay Maintenance Engineers, Rutherford, N. J.*

Pusher, Tube Bundle

Eliminates need for steel supports during bundle removal. (157B)

. . . Hydraulic handling device removes and replaces heat exchanger bundle tubes without need for "jerry-built" rigging and pulling beams. It also reduces the usual safety hazards. Two men can push a bundle 8 ft. in less than 25 min. Hydro-ejector comes as a packaged unit ready for instant operation.—*Fabricated Products Div., M. W. Kellogg Co., New York, N. Y.*

Reroller, Drum

Reconditions drum. (157C)

. . . With this drum rerolling machine all dents, wrinkles, irregularities can be rolled out of the 30- and 55-gal. drums. Machine handles both sizes without resetting or changing parts. Rollers conform to 30-gal. size. Body and hoop rolling operations are separate. Two sets of rollers are powered by one common drive.—*Drum Equipment Corp., Union, N. J.*

Rope, Insulating

Offers more linear ft. per lb. (157D)

. . . Light-weight Caposite asbestos rope is effective insulation for curved and irregular piping, bends, fittings, valves, expansion joints. Rope insulates effectively up to 1,200 F. can be removed and reapplied repeatedly at temperatures to 750 F. It is available in 100-ft. coils, in diameters from ½ to 2 in.—*North American Asbestos Corp., Chicago 4, Ill.*

Saw, Pipe

For field use, fully portable. (157E)

. . . 120-lb. portable power pipe saw, operating in space 25 in. wide, is used for on-the-job-cutting of 2- to 8-in. cast iron and steel pipe, bar stock and beams. Chain pipe-vise clamps saw to pipe, ready to cut, in a matter of seconds. Square cut at right angle to the pipe is assured by the V-shaped saddle base.—*E. H. Wachs Co., Chicago 22, Ill.*

Service, Mobile

Caters to valve needs. (157F)

. . . Mobile unit carries complete stock of valve lubricants, lubrication fittings, lubricant pumping equipment and spare parts. All makes of valves can be handled. Service is now being expanded on a national scale, is available on company- or plant-wide basis.—*Rockwell Mfg. Co., Pittsburgh 8, Pa.*

Slicer, Bundle

Cuts retubing time. (157G)

. . . With this bundle slicer, tube-removal time is cut from 16 or more man hours to 1½. Cutting is done by a reinforced, resinoid type, abrasive wheel mounted on long movable arm. Tubes are cut clean without burrs. When the wheel is turned over between cuts, motor reverses rotation, keeping spark stream away from operator.—*Ohmstede Machine Works, Beaumont, Tex.*

Sprayer, Hot

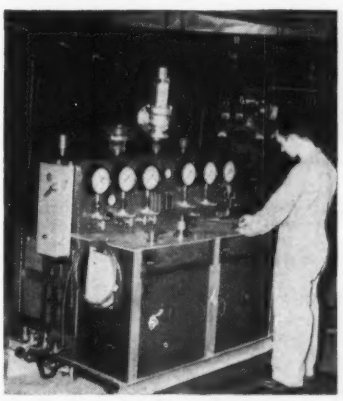
Gives better film under field conditions. (157H)

. . . Spee-Flo Hot Spray Portable 600 spraying machine helps control corrosion. Wherever protective coatings are applied outdoors it saves up to 35% of labor, gives better quality by spraying hot. Vinyls, enamel, cutback asphaltums and similar materials can be sprayed hot to give smoother, denser, less porous film that's free of pinholes and imperfections. Application is faster and film is thicker.—*Spee-Flo Corp., Houston, Tex.*

Tester, Valve

Semi-portable, speeds testing, saves time and money. (157I)

. . . Valve-testing station boosts plant efficiency by combining all testing equipment in one unit. Station will test 97% of all globe, gate, plug cocks, safety and relief valves. Selling at ¼ average cost of a custom built-in-plant test station, unit pays for itself with savings made during one turn around plant's valve facilities. Built-in features include: portability; compact dimensions—5 ft. x 3 ft. 8 in.; ready operation—once water, air and electric utility lines are connected; engineered ASME construction throughout; accessory equipment—e.g. spools, gages, etc.; compressed gas testing facilities—at extra cost.—*Farris Engineering Corp., Palisades Park, N. J.*



MAINTENANCE TOOLS & SUPPLIES, continued

Thread Compound

Gives permanent lubricant-seal to threaded fittings. (158A)

. . . Big D Dope, containing 90% freshly disintegrated metallic lead, saves in excess of 70% on materials and manpower compared with other thread compounds. Single application provides permanent lead-plating permitting repeated, easy, quick assembly and disassembly of any threaded connection without redoping and damage to threads. Compound is warranted antigall, noncorrosive, non-hardening and leak-proof. It's resistant to steam, gas, oil, air, chemicals, alkali, acids, ammonia, all hydrocarbons under most punishing pressures, temperatures, vacuums. It's been thoroughly proven in service on hydraulic lines, on nuts and studs, on all types of pumps and engines.—*C. H. Dragert Co., Dallas, Tex.*

Tool, Inspection

Locates flaws in steel equipment. (158B)

. . . SempuN magnetic flaw detector is a permanent magnet with ball pivots and multi-self-adjusting magnetic pins that provide good contact on any surface contour. Due to nature of device, equipment can be inspected in hazardous areas without danger of fire. Since magnet supplies d.c. magnetic force, sub-surface as well as surface flaws are detected. Detector is supplied with check test piece, remagnetizing leads and spray bottles containing inspection mediums.—*Rice-Peterson Sales, Inc., Palo Alto, Calif.*

Tool, Pipe Fitting

Fits Haveg pipe on the job. (158C)

. . . With hand-operated tool you can have Haveg pipe fitting done on the job without need for using a machine shop lathe. It is felt that costly shutdowns or losses of material in process can be avoided by making quick repairs with Haveg pipe. New lines can be installed rapidly using stock lengths of prefabricated pipe. It's no longer necessary to draw up the complete bill of materials for advance fabrication of lines.—*Haveg Corp., Newark, Del.*

Welding

For stainless, alloy steel pipe. (158D)

. . . With EB Weld Insert process either seamless or welded stainless and alloy pipe can be butt welded with the actual welding being done on one side only. Smooth, uniform weld surface is obtained using conventional, inert-gas-shielded, tungsten-arc torch. —*Arcos Corp., Philadelphia 43, Pa.*

Welding Arc

Ups welding speed 15-20%, cuts cost 25-50%. (158E)

. . . Higher welding speeds, better quality welds and lower operating costs are principal benefits of new consumable-electrode, inert-gas, arc-welding process. System allows welding of mild as well as stainless steel. Welds can be painted without cleaning, look to be part of design while internally penetration is good and of sound X-ray quality. Most significant advance in system is electrode wire—a special analysis mild steel with a coating that stabilizes the arc, eliminates spatter, assures good penetration with high burn-off rate.—*Westinghouse Electric Corp., Pittsburgh 30, Pa.*

X-Ray, Mobile

Ferrets out weld flaws in field. (158F)

. . . Resotron 250 (250,000 v.), mobile X-ray unit, can X-ray steel up to 3½ in. thick, is less than ½ size and ⅛ weight of conventional ¼ million-v. unit. Snout protruding from head can be inserted into small castings to check for imperfections. Unit can be used on anything from magnesium to steel. —*General Electric Co., X-Ray Dept., Milwaukee 14, Wis.*

X-Ray, Portable

Ten-lb. unit comparable to 100,000-v. machine. (158G)

. . . Small, cannister X-ray unit can emanate rays equal in energy to those from 100,000-v. machine. Unit doesn't require any electrical power supply. Tiny particle of radioactive thulium produces radiations needed for X-ray photographs. Machine is potential inexpensive source of X-rays for both medical and industrial use.—*Argonne National Laboratory, Lemont, Ill.*

X-Ray, Portable

Checks weldments in field and plant. (158H)

. . . Portable X-Tron 180 X-ray machine packs wallop that penetrates 2⅛ in. of steel and will traverse pipeline greater than 12 in. in dia. Unit offers option of single beryllium window for straight-away shot or projection of X-rays around full 360-deg. circle. Compensating device takes care of line fluctuations. There's a cooling system and protection against both thermal and electric overload. Control panel is semi-automatic and easy to operate. —*Mitchell Radiation Products Corp., Norristown, Pa.*

• Materials of Construction

Aluminum, Sheet

Protects insulation. (159A)

. . . Aluminum sheet—flat or corrugated—weatherproofs insulation and guards it against mechanical damage. Costwise it's competitive with other coverings, is easy to install, remove and maintain, is strong and fire resistant. Flat sheet is used over pipeline insulation, corrugated roofing over large storage tanks and pressure vessels. Aluminum grade is dictated by atmospheric conditions.—*Kaiser Aluminum & Chemical Corp., Oakland 12, Calif.*

Castings, Stainless Steel

Available in extra-low carbon grade. (159B)

. . . Stainless-steel castings in 18-8 and 18-8 Mo can be furnished with guaranteed maximum carbon content of 0.03 or lower under special conditions. This stainless steel minimizes corrosion adjacent to welds under severely corrosive conditions.—*Electric Steel Foundry Co., Portland 10, Ore.*

Concrete, Cellular

Made with foam. (159C)

. . . National-Crete process adds preformed foam directly to standard concrete mix to give a cellular concrete which is a light, yet strong, building material. Foam-generating apparatus and liquid are readily portable and easy to handle.—*National Foam System, Inc., West Chester, Pa.*

Concrete, Vermiculite

Withstands fire in steel roof construction. (159D)

. . . Underwriters' Laboratories test shows that combination roof, with reinforced vermiculite insulating concrete on a ribbed deck, is 7 times more fire resistive than anything else in its field. Despite high heat, vermiculite-steel deck didn't collapse, deflections were nominal. Test slab had 1:4 mix of reinforced vermiculite concrete, 3-in. thick, on a Holorib steel deck. Slab load was 40 lb. per sq. ft. Cost of new system is comparable with other unprotected systems.—*Vermiculite Institute, Chicago 3, Ill.*

Cover, Plastic

Removable, protects insulation. (159E)

. . . Protekinsul is zippered, preformed plastic insulation cover which can be installed or removed in a jiffy. End joints or fittings are wrapped tightly with plastic tape then sealed with a vinyl-resin coating. Cover is flexible; durable; highly resistant to moisture-vapor transmission, mold, mildew, most chemicals.—*Miracle Adhesives Corp., New York 22, N. Y.*

Felt, Refractory

For service to 2,000 F. (159F)

. . . Refractory-fiber felt can be used for high-temperature insulation, as a refractory filling and packing and as a filter medium for hot gases and liquids. Thermoflex fibers are opaque to infrared radiation, make felt have low conductivity at high temperature.—*Johns-Manville, New York 16, N. Y.*

Flooring, Industrial

Chemically resistant. (159G)

. . . Manufactured in either strips or blocks, Gam-En-Wood flooring resists action of oil, chemicals or grease. It's non-conductive, fire-resistant, non-slip. Flooring is a laminate of Enrup rubber-based plastic bonded to solid or laminated hardwoods.—*Gamble Brothers, Inc., Louisville, Ky.*

Insulation, Glass

Used in test cell for atomic submarine. (159H)

. . . Foamglas cellular glass insulation, protecting elaborate test cell for atomic submarine, is applied in form of 2 x 12 x 18 in. blocks. Each block is impaled on two steel pins welded to steel shell. Clips fastened to pins holds blocks in place. Asphalt cutback is used between the blocks and shell.—*Pittsburgh Corning Corp., Pittsburgh 22, Pa.*

Insulation, Pipe

One-piece molded, glass-fibered, available in wide size range. (159I)

. . . G-B Snap-On pipe insulation can cover hot and cold piping from ¾ to 24 in. dia. Molded in one piece of fine glass fibers Snap-On comes in 3-ft. lengths in diameters to 2 in. and 6-ft. lengths in larger diameters. Wall thicknesses (½ to 1½ in.) available in sizes to 12 in.; 1, 1½ and 3 in. for piping above 12 in. dia. To use, you merely spread insulation open at single seam and snap it over pipe. Seam is joined tightly with staples or other means.—*Gustin-Bacon Mfg. Co., Kansas City, Mo.*

Jacketing, Aluminum

Protects pipe, equipment insulation. (159J)

. . . Al-Cor-Jack sheet aluminum jacketing is low cost protection for insulated pipelines and equipment—indoors and outdoors. Furnished in corrugated form (with or without vapor barrier), it is light, easy to handle, speedily installed. No painting necessary. When cleaning, equipment covered with jacketing can be hosed down with rest of the plant.—*Aljon Mfg. Co., Roselle, N. J.*

MATERIALS OF CONSTRUCTION, continued

Jacketing, Heat Transfer

Helps apply heat externally. (160A)

. . . Thermon heat transfer media is remedy for freezing and plugging of molten or liquid materials that are highly viscous at normal temperatures. Used in conjunction with conventional steam tracing, it eliminates jacketing in majority of cases. Savings over equivalent jacketed equipment: 50-60%. Thermonizing consists of installing required kind and quantity of tubing, mixing and applying Thermon over coils (so that tubing and exposed surfaces of equipment are thoroughly covered), baking, applying heat-resistant finish.—*Thermon Mfg. Co., Pasadena, Tex.*

Lining System

Ceramic type, protects water tanks. (160B)

. . . Ceramic-base tank lining system can expand or contract with iron or steel to which it's bonded. It can be used on either new or old tanks. ¼-in. protective layer won't crack or fail when subjected to variable temperatures from 34 to 230 F. Effectiveness in preventing corrosion by commercially neutral water isn't impaired by extreme temperature fluctuations. Lining won't contaminate water.—*Emjay Maintenance Engineers, Rutherford, N. J.*

Metals, Clad

Range of available cladding metals is extended. (160C)

. . . A wide variety of clad metals for industrial use now is being fabricated by a new high vacuum brazing method. Among the claddings available are nickel-base steel alloys such as chromium, chromium-nickel, and nickel; Monel, Inconel, Hastelloys and silver. The brazed bond is a high-strength joint which meets all applicable code requirements. Called Hortonclad, it can be worked readily by usual methods such as rolling, bending, welding and pressing.—*Chicago Bridge & Iron Co., Chicago 4, Ill.*

Resin, Reinforced Polyester

Plugs gaps, strengthens water header. (160D)

. . . Resin laminate salvaged leaking water header at Celanese Corp. of America's Bishop, Tex., plant. Scale was first knocked off and two plies of glass cloth saturated with MR-28C self-curling polyester resin, applied over large holes. Leaks were then plugged and two additional plies of cloth wrapped about pipe.—*Celanese Corp. of America, New York 16, N. Y.*

Siding, Industrial

Aluminum, for low-cost structures. (160E)

. . . Trim, attractive appearance is offered for low-cost industrial buildings by installing Alcoa's ribbed, industrial siding. Embossed surface produces stuccoed effect that diffuses light. In addition to its use in frame-type structures, ribbed siding serves as facing sheet on concrete-block buildings.—*Aluminum Co. of America, Pittsburgh 19, Pa.*

Silicon Carbide

Fabricated into shapes. (160F)

. . . Refrax silicon-nitride-bonded silicon carbide can be made into a wide range of precise, intricate forms. Thus, silicon carbide's superior properties as a construction material—resistance to high temperature, thermal shock, abrasion and corrosion—can now be utilized in such parts as spray nozzles with internal fins; pump housings and impellers; agitator arms and blades. Refrax parts will retain their shape and properties after extensive service up to 3,000 F.—*Refractories Div., Carborundum Co., Perth Amboy, N. J.*

Steel, Stainless

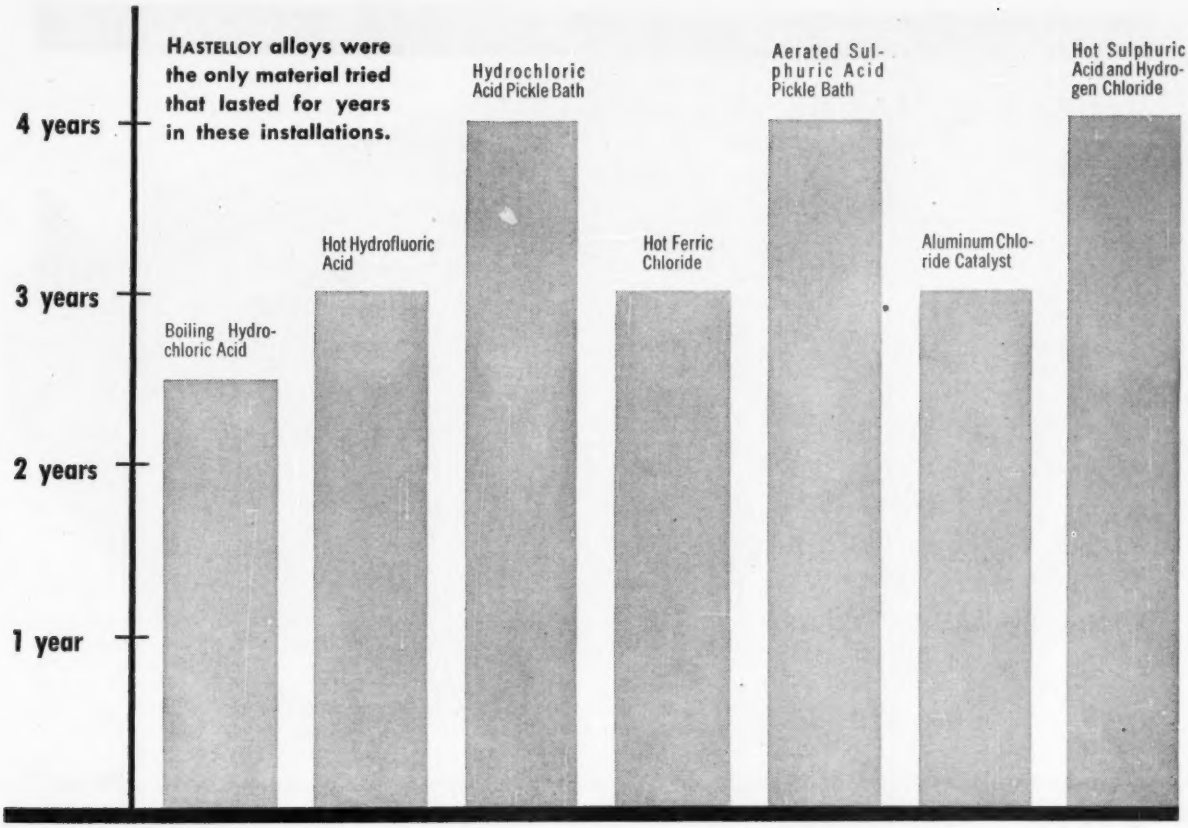
Approved for welded construction. (160G)

. . . Carpenter stainless steel 20 Cb now is approved (ASME Case 1188) for construction of welded pressure vessels. 20 Cb is formulated to permit fabricated pieces being placed in service in as-welded condition. Columbium in alloy minimizes precipitation of carbides during hot working. Any of standard electric arc and resistance welding processes are made suitable for this steel. Furnished in sheets, plates, pipes, tubing and bars, this alloy is used in constructing mixing tanks, heat exchangers, process piping, bubble caps, metal cleaning and pickling tanks, also spray pickle equipment, etc.—*Alloy Tube Div., Carpenter Steel Co., Union, N. J.*

Steel, Stainless

In larger quantities. (160H)

. . . ELC grade stainless steel is available in larger quantities as a result of manufacturer's expansion (by 6 tons of metal per day). ELC can be welded without heat treatment.—*Cooper Alloy Foundry Co., Hillside, N. J.*


HASTELLOY alloys were the only material tried that lasted for years in these installations.
4 years
3 years
2 years
1 year
Boiling Hydrochloric Acid
Hot Hydrofluoric Acid
Hydrochloric Acid Pickle Bath
Hot Ferric Chloride
Aerated Sulphuric Acid Pickle Bath
Aluminum Chloride Catalyst
Hot Sulphuric Acid and Hydrogen Chloride

HASTELLOY Alloys *last for years under severe corrosive conditions*

These graphs were drawn from data on actual installations of HASTELLOY alloys in severe corrosive media. No other material tried lasted more than six months in most of these installations, some considerably less than this. HASTELLOY alloys lasted for years.

Use of HASTELLOY alloys saved time, money, and production time in all the installations. The graphs do not tell the entire story by any means. Some of the parts made of HASTELLOY alloys were still going strong when the data were obtained. In some, corrosion was complicated by abrasion, impact, and the presence of contaminants.

Samples for testing HASTELLOY alloys under actual operating conditions are available without obligation. Just let us know what corrosive conditions are involved. For a copy of a booklet describing HASTELLOY alloys, get in touch with the nearest Haynes Stellite Company Office.

HAYNES TRADE-MARK ALLOYS

HAYNES STELLITE COMPANY

A Division of Union Carbide and Carbon Corporation

UCC

General Offices and Works: Kokomo, Indiana

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"Haynes" and "Hastelloy" are registered trade-marks of Union Carbide and Carbon Corporation.

MATERIALS OF CONSTRUCTION, continued

Structures, Steel

Fastened with bolts, nuts, washers. (162A)

. . . Heavy structural steel framework for buildings is fastened with bolts, nuts, washers, rather than with rivets. Bolted joints are easier and safer to install; good for life of building. Clamping force transmitted through washers gives increased strength. Heat treatment makes washers resistant to surface abrasion. Washers have sufficient ductility to form with structural steel members.—*U. S. Steel Supply Div., U. S. Steel Corp., Chicago 4, Ill.*

Veneer, Ceramic

5X lighter than similar ceramics. (162B)

. . . Vitrineer ceramic veneer resists crazing, chemical attack and high temperatures, making it useful for interior surfaces in chemical plants. Vitrineer is said to be first successful, large, thin ceramic sheet: flat like plate glass, $\frac{1}{8}$-in. thick, weighs 4 lb. per sq. ft., comes in sizes 12 x 16 and 16 x 24, can be cut with a masonry saw.—*Robinson Brick & Tile Co., Denver, Colo.*

Welding System

For chrome-moly steels. (162C)

. . . Arc welding system using premium Murex croloy electrodes is being offered for fabrication of chromium-molybdenum alloy steels in high-pressure, high-temperature piping and equipment. Advantages claimed: weld cracking is almost eliminated, extremely high preheat temperatures can be avoided, not necessary to maintain preheat after welding and prior to stress relieving and in many cases it obviates need for stress relieving provided applicable codes are not violated.—*Metal & Thermit Corp., New York 17, N. Y.*

• Mechanical Equipment

Base, Motor

Time saver for variable pitch sheaves. (162D)

. . . Motor base permits quick, easy adjustment of center distances for variable speed drives. By releasing the adjusting screw you can slide motor after base is bolted down. Screw then is replaced in slotted boss for final take-up. This base was designed for motors fitted with wide-range variable-pitch sheaves.—*T. B. Wood's Sons Co., Chambersburg, Pa.*

Bearing, Dry

High density, works without lubrication. (162E)

. . . Deva alloys work as bearing surfaces without lubrication under high pressures from —200 to 700 C. Available either as copper, iron or aluminum base materials, alloys have unique high density properties; are furnished with high degrees of Brinnel hardness. Performance is due to presence of continuous graphite film that forms as surface runs in. Alloys are formed under high pressure. *Neumann & Welchman, Inc., Fairlawn, N. J.*

Bearing, Linear

Operates under corrosive conditions. (162F)

. . . All-stainless-steel ball bushings can operate in corrosive liquids and atmospheres. Bearings can be used where oil can't be tolerated because of contamination or high temperature. Ball bushings have free rolling characteristics which practically eliminate friction, preclude binding or chatter. Low friction coefficient (0.002 to 0.004) practically eliminates wear, affords lasting precision alignment.—*Thomson Industries, Inc., Manhasset, N. Y.*

Closure, Pressure

Uses metal-to-metal contact. (162G)

. . . Insert flexed metal gasket ring between opposing tapers on plug and vessel wall prior to sealing closure. By tightening spider nut, gasket will be held in compression between plug and weld neck. Metal-to-metal contact seals more tightly as pressure rises. Flex Ring closures consist of weld neck, plug, gasket, spider.—*Sillers Engineering Co., Dallas, Tex.*

Coupling, Gear

Overcomes misalignment with new gear-tooth design. (162H)

. . . Sphereflex coupling withstands higher horsepower and greater misalignment than comparable couplings because the gear teeth are cut on a segment of a sphere. Male teeth of each half coupling are cut on spherical arc; internal teeth are cut with straight root. When misalignment occurs, the curved tooth maintains a constant area of contact with internal tooth. Coupling runs with angular misalignments up to plus or minus $3\frac{1}{2}°$ on each half or a total of $\pm 7°$—*Philadelphia Gear Works, Philadelphia 34, Pa.*

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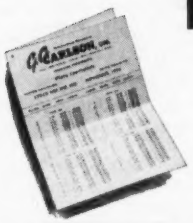

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MECHANICAL EQUIPMENT, continued

Coupling, Shaft

Maximum torsional strength. (164A)

. . . Universal coupling with equilateral tri-lobe shape on its driving members is lighter and less costly than equivalent universal spline coupling. In relation to its weight it provides greater axial and torsional strength with smooth and quiet operation under heavy loads. Male members have bow-like peripheral profile that permits 8° angular rotational displacement. Driving members are self-centering under all loads. Couplings are available in sizes to 5-in. dia.—*Kerns Mfg. Corp., Long Island City, N. Y.*

Coupling, Spacer

Plugs large gap between shafts. (164B)

. . . For gaps up to 12 in. between driving and driven shafts, Type F Steelflex is ideal. It acts as a spacer, can be disconnected or connected without moving either the motor or driven unit and without disassembling the coupling. For connecting process pumps to motors.—*Falk Corp., Milwaukee, Wis.*

Drive, Belt

Does job of set of matched V-belts. (164C)

. . . Poly-V belt is single, endless rubber belt that performs same job done by set of matched V-belts. It handles up to 50% greater horsepower with same width or equal horsepower with ⅓ less sheave width. Belt and sheave have longer life than conventional V-belt drives.—*Manhattan Rubber Div., Raybestos-Manhattan, Inc., Passaic, N. J.*

Drive, Agitator

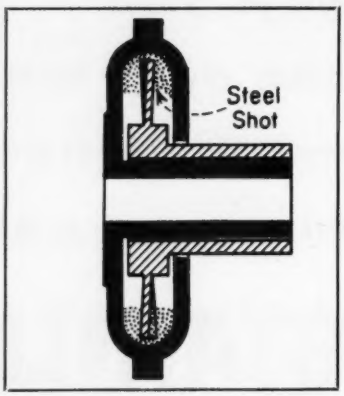
For reactors up to 100 gal. (164D)

. . . A PW drive is designed for reactors up to 100 gal. size which generally process small quantities of many different materials. Agitator speed can be varied easily either with various combinations of constant speed V-belt sheaves or with variable pitch sheaves. —*Pfaudler Co., Rochester 4, N. Y.*

Drive, Dry Fluid

Runs without slippage. (164E)

. . . Flexidyne drive, entirely dry, uses fine particles of spherical steel shot as fluid-flow charge, handles heavy inertia and shock loads with ease. While possessing slip characteristics common to other fluid drives on startup and overload, Flexidyne uniquely runs without slippage at normal operating speed and load. Torque capacity can be varied by changing the amount of flow charge in the housing, thus giving exact starting torque needed for anything from smoothest to fastest start. Flexidyne is compact (8-in. dia. housing for 10 hp., 1,750-rpm. unit), low cost, efficient. Four sizes are available rated 3 to 30 hp. at 1,800 rpm.—*Dodge Mfg. Corp., Mishawaka, Ind.*



Drive, Variable-Speed

Ball transmission tilts to vary speed. (164F)

. . . Speed variator is built with in-line input and output shafts that provide stepless regulation of output speed from ¼ to 3 times the input speed. Coaxial shafts rotate in the same direction either clockwise or counterclockwise. Built-in, torque-responsive mechanism assures the required tractive force for all operating conditions and high operating efficiency. Compact, simple unit is 75-90% efficient over a 9 to 1 speed range.—*Speed Variator Div., Cleveland Worm and Gear Co., Cleveland 4, Ohio.*

Engine, Power

Doubles former hp. coverage in single units. (164G)

. . . According to manufacturer, SW 14 engine is first U. S. heavy-duty, relatively low-speed engine to operate continuously at brake mean effective pressures beyond 200 psi. Engines are built in 6 and 8 cylinder in-line, 12 and 16 vee designs rated 1,360-5,000 hp. at 450 rpm. Basic design is four-cycle supercharged type with inherently low fuel consumption up to 10% overload. Engines offer tri-power feature for operation either as oil diesels, dual-fuel diesels or spark ignition gas units. Parts are interchangeable in either vee or in-line construction.—*Worthington Corp., Harrison, N. J.*

Gear, Reduction

Highly efficient at high reduction ratios. (164H)

. . . Cyclo reduction gear offers 95-98% efficiency with attendant savings in power and maintenance. Typical slow speed applications: mixing vats, conveyors, ball mills. Gear is available as self-contained unit or as an integral motorgear.—*Ore & Chemical Corp., New York 4, N. Y.*

This is Why the Nash is the Most Simple Compressor

It's the Nash!

There are no mechanical complications in a Nash Compressor. A single moving element, a round rotor, with shrouded blades, forming a series of buckets, revolves freely in an elliptical casing containing any low viscosity liquid. This liquid, carried with the rotor, follows the elliptical contour of the casing.

The moving liquid therefore recedes from the rotor buckets at the wide part of the ellipse, permitting the buckets to fill with gas from the stationary Inlet Ports. As the casing narrows, the liquid is forced back into the rotor buckets, compressing the gas, and delivering it through the fixed Outlet Ports.

Nash Compressors produce 75 lbs pressure in a single stage, with capacities to 6 million cu. ft. per day in a single structure. Since compression is secured by an entirely different principle, gas pumping problems difficult with ordinary pumps are often handled easily in a Nash.

Nash simplicity means low maintenance cost, with original pump performance constant over long periods Data on these pumps sent immediately on request

No internal wearing parts.

No valves, pistons, or vanes.

No internal lubrication.

Low maintenance cost.

Saves floor space.

Desired delivery temperature automatically maintained.

Slugs of liquid entering pump will do no harm.

75 pounds in a single stage.

NASH ENGINEERING COMPANY

313 WILSON, SO. NORWALK, CONN.

MECHANICAL EQUIPMENT, continued

Idlers, Belt

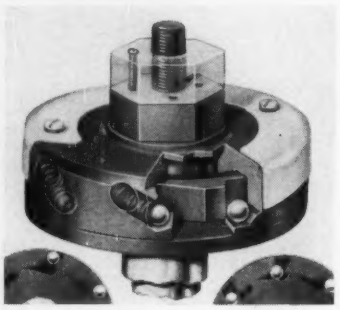
New seal design retains grease, keeps dirt out. (166A)

. . . Line of MD and HD series belt idlers feature Duoflex seal. Contact-seal keeps out dirt, retains grease for endless period of time. Idlers are classed as permanently lubricated. Neoprene shaft connectors permit regreasing from either end when, and if, desirable. Rolls can be removed without loosening or removing stands.—*Jeffrey Mfg. Co., Columbus 16, Ohio.*

Ratchet, Backspin

Prevents damage to vertical turbine pump on shutdown. (166B)

. . . When vertical turbine pump shuts down, backspin from receding liquid column can damage the pump and drive-motor. To avoid this risk Bal-lok vertical hollow-shaft electric pump-motor incorporates a ball-type, non-reverse ratchet to lock within 1/72 of a revolution. Other features include: over-hung, canopy-type hood for complete protection against the elements; heavy-duty, single-row ball thrust bearings; grease or oil lubrication according to size.—*ACEC Electric Corp., New York 17, N. Y.*



Reducer, Vertical-Speed

For use on mixers and agitators. (166C)

. . . Line of Shaft King speed-reduction drives is designed for shaft mounting where driven machine shaft is in a vertical position. Construction includes helical gears cut from alloy steel forgings; ball and tapered-roller bearings; internally ribbed, three-wall cast-iron housing; patented concentric-shaft design.—*American Pulley Co., Philadelphia 29, Pa.*

Reducer, Worm

Has fluid coupling for smooth starting. (166D)

. . . Worm reducer, built with fluid coupling, provides smooth gradual acceleration. It's adapted to powering mixers, conveyors, centrifugals, cranes, etc. Unit is more compact than helical gear reducers, can be mounted in 16 different positions.—*Reuland Electric Co., Alhambra, Calif.*

Rings, O-

Coated with Kel-F. (166E)

. . . Silicone-rubber O-rings are furnished with a coating of Kel-F. Coated rings combines chemical resistance with good mechanical properties from —120 to +390 F.—*Bacon Industries, Inc., Watertown, Mass.*

Seal, Mechanical

For high-pressure sealing of rotary shafts. (166F)

. . . Type P. T. rotary mechanical seal retains process fluids under high pressure. Suitable for temperatures from —80 to +400 F., it operates against pressures from 50-600 psi. Seal can be made from selected metal alloys for handling all kinds of fluids except molten alkali metals and some fluorine compounds at higher temperatures.—*Duralmetallic Corp., Kalamazoo, Mich.*

Seal, Mixer-Shaft

Prevents escape of liquid, gas or vapor. (166G)

. . . Rotary mechanical shaft seal, designed especially for liquid mixing service, is constructed as easily replaceable cartridge assembly, gives long service without adjustment. Replacement takes a matter of minutes. Where mixer is entirely below the liquid level or installed on a pressure vessel, locking collar arrangement allows seal replacement without loss of product or pressure. Seals are available for pressures to 1,200 psig. and temperatures from —120 to +485 F. Construction materials include stainless steel, ceramic, bronze, Teflon.—*Mixing Equipment Co., Inc., Rochester 11, N. Y.*

Seal, Shaft

Uses magnet to hold sealing surfaces together. (166H)

. . . Longer life, lower cost and greater efficiency are claimed for rotary seal that prevents escape of fluids under pressure around rotating shaft. Magnetic force keeps sealing surfaces in effective contact when no fluid pressure exists. Seal is effective under pressures up to 3,000 psi. and temperatures to 500 F.—*Magnetic Seal Corp., Georgiaville, R. I.*

Seal, Shaft

For side-entering mixers. (166I)

. . . Sealol-Flexibox mechanical shaft seal for side-entering mixers eliminates need for costly tank drainage when maintenance is needed. It prevents loss of product in case of seal failure. Secondary seal incorporated in unit seals off tank while mechanical seal is being serviced. Thus, mechanical seal can be repaired, replaced or converted to conventional stuffing box if replacement parts aren't immediately available. Seal can be repaired easily in field at very low cost.—*New England Tank & Tower Co., Everett, Mass.*

Seals, Lubricated

Reduce friction under dynamic conditions. (167A)

. . . Working surfaces of rubber packing, O-rings, valve seats, resilient mountings and similar parts are lubricated by Gorlube process to give low friction and long life. Friction is less than with oil alone and in combination with oil 40% less than oil alone. Process incorporates laminar, solid lubricant molybdenum disulfide into rubber. Type of part and end use determine whether lubricant will be dispersed uniformly throughout material; concentrated in thick impregnated outer layer; or as an impacted skin. Impacted skin type of Gorlube treatment may be applied to outer surfaces of almost any molded rubber part after molding. Other types of treatment require special techniques in compounding, raw material preparation and molding.—*Goshen Rubber Co., Inc., Goshen, N. Y.*

• Packaging and Handling Equipment

Bags, Multiwall

Designed for smooth, easy opening. (167B)

. . . Snap-open design makes industrial multiwall bags easier to use. It reduces opening time and eliminates spillage from ragged openings that waste material. Quick-opening device consists of a series of small perforations in one corner of the bag under tape and near sewing line. By grasping tape at this corner and pulling sharply upward, an opening is started instantly. It can be stopped at any point convenient for controlled spout pouring or continued along entire length. With these bags there is no need for knife, scissors, etc.—*Hudson Pulp & Paper Corp., New York, N. Y.*

Bins, Storage

For buildings with limited head room. (167C)

. . . Suitable bulk-storage bins now have been developed for space with limited head room. Constructed to meet sanitary requirements, the horizontal bolted bin is 11 ft. high and can be furnished in almost any length. Screw discharge mechanism can be provided. Bolted sections can be added to make bins taller or longer.—*Day Co., Minneapolis 13, Minn.*

Box, Collapsible Steel

Can be used over and over, withstands abuse. (167D)

. . . Light weight, collapsible Collapsa-tainer steel shipping box features hinged construction. Box can be assembled by one man in fraction of a minute. To knock down just pull two hinge pins and fold sides. Box, made of 18 gage steel with 16 gage reinforcements, weighs about 100 lb. Interior cubic space measures 30 in. on a side. Fully collapsed unit measures 31½x31½x9 in.—*Republic Steel Corp., Cleveland 27, Ohio.*

Container, Space-Saving

Has new manufacturer. (167E)

. . . Nest-A-Bin shipping containers have been put into volume production by a new manufacturer. Lightweight aluminum bins have been redesigned and tested for broadest possible industrial use in shipping and dispensing granular solids, pastes, etc. Standard fork truck handles loaded bins. Empty bin components can be stacked one within the other.—*Kaiser Nest-A-Bin Div., Willys Motors, Inc., San Leandro, Calif.*

Conveyor, Bulk

Conveys in any direction. (167F)

. . . Two-directional chain conveys bulk solids in any direction. Infinite angular relationship is possible because of two-directional linkage. Two-piece flight is of high graphite cast iron, can be replaced without disassembling chain. — *Prab Conveyors, Inc., St. Clair Shores, Mich.*

Conveyor, Portable

Loads 60 tons/hr. (167G)

. . . Delta Bazooka is portable two-screw conveyor which transfers granular solids between levels from 6-16 ft. It can be moved behind an auto or light truck. Screw is driven by a 2-cylinder engine equipped with a self-starter, clutch and gear-reduction unit. Angle of elevation is controlled hydraulically.—*Delta Tank Mfg. Co., Baton Rouge, La.*

Conveyor, Sectional

Heavy-duty unit for conveying bags. (167H)

. . . Saco sectional bag conveyor is heavy-duty unit handling bags, boxes and cartons. It's built in 18- or 24-in. widths with standard 20-ft. interlocking sections. Designed for horizontal conveying, units can be adapted for portable or inclined conveying. Maximum capacity of conveyor is 200 lb. per lineal ft.—*Stephens-Adamson Mfg. Co., Aurora, Ill.*

PACKAGING & HANDLING EQUIPMENT, continued

Conveyors, Belt

for short hauls. (168A)

. . . For first time, standardized components are available to form conveyors ranging from 8 to 44 ft. long, in increments of 1 ft. Available belt widths are 18, 24, 30 in.; handle capacities of 50 to 480 tons per hr. Assembly is mounted on 5-in. channel frame and can span 15 ft. between supports. Other features: 4-in. dia. ball-bearing troughing carriers and full Alemite lubrication. — *Barber-Green Co. Aurora, Ill.*

Conveyors, Steel-Belt

Assembled from pre-engineered parts. (168B)

. . . Complete conveyor can be assembled by selecting pre-engineered components to meet requirements. Pre-engineered units eliminate need for specifying bearings, shafts, pulley sizes, etc. Trial-and-error selection of items such as belt and pulley scrapers, unloading devices, safety equipment is avoided. Typical packaged components include drive-end and tension-end assemblies, steel belts, discharge devices, safety devices, loading hoppers, etc. All components are pre-engineered and ready for immediate installation on new or suitable existing supporting structure.—*Sandvik Steel Belt Conveyors Div., Sandvik Steel, Inc., New York 11, N. Y.*

Discharger, Screw

For aluminum semi-trailer. (168C)

. . . Screw-type bottom hopper, semi-trailer has aluminum container, frameless members of high tensile steel tubing. Discharger, powered by gasoline motor, operates on an incline toward rear permitting discharge height of 44 in. Motor controls are located on either side of the trailer. Capacity of standard unit is 645 cu. ft., capable of handling 120 bbl. of heavy powders in most states.—*Gramm Trailer Corp., Lima, Ohio.*

Dumper, Drum

Elevates, dumps into high-walled vessels. (168D)

. . . Portable dumper empties drums and barrels into vats or other high-walled vessels. Semi-automatic machine eliminates manual lifting, speeds drum dumping, eliminates dust nuisance. Dust-control spout guides drum contents into receiver without shrinkage or dusting. Entire operation is controlled by one man at push-button panel. Dumpers are available for any size drum, discharge at any height.—*Gifford-Wood Co., Hudson, N. Y.*

Feeder-Conveyor

Mounted on rubber-encased steel. (168E)

. . . Resilient-Flow feeder-conveyor is supported on a spring mounting made of 3-in.-high blocks of neoprene (for durability and gentle handling). Mountings are considered equivalent to hermetically-sealed bearings. Maintenance problems are minimized. Conveying speed can be varied by remote control from 1 to 60 ft. per min. Gentle vibrating action handles delicate materials without damage. Abrasive materials can be moved with minimum pan wear. Feeds up to 150 tons per hr.; conveys up to 20 tons per hr.—*Carrier Conveyor Corp., Louisville, Ky.*

Filler, Drum

Delivers to 30 or 55 gal. drums. (168F)

. . . Diafram filler can accurately fill up to 60 drums per hr. Completely free of intricate meters it uses a unique, double diaphragm for accuracy within 0.001% in 30 or 55 gal. Machine's all-steel, elliptical body is divided by double diaphragm.—*Drum Equipment Corp., Union, N. J.*

Filling Machine

For open-mouth multiwall shipping sacks. (168G)

. . . Automatic filling machine for open-mouth multiwall bags is economical to install and maintain. Exclusive controls maintain unusual accuracy at high speeds. Machine can handle weights from 25 to 200 lb., with an average variance of not more than 8 oz. plus or minus under ordinary production conditions during a 24-hr. day. No head of material is needed to hold this accuracy.—*Kraft Bag Corp., New York 20, N. Y.*

Hemisphere, Storage

Offers savings in cost, storage space. (168H)

. . . Sheet metal-covered hemisphere at Kaiser Gypsum's Seattle, Wash., plaster mill and board plant stores 25,000 tons of minus 4 in. raw gypsum. Material unloaded from ships is delivered by conveyor through the top opening directly onto single conical storage pile. Full cantilever construction of hemisphere gives a clear span of 175 ft. and a pile height of 7 stories.—*Kaiser Engineers Div., Henry J. Kaiser Co., Oakland, Calif.*

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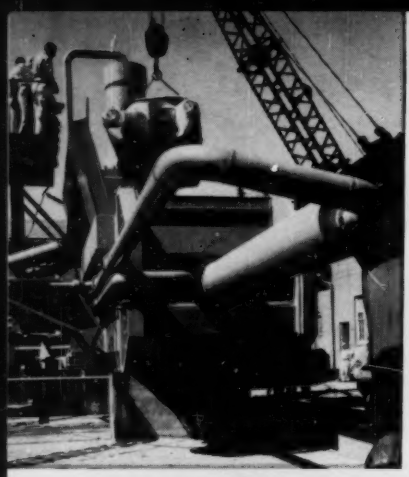

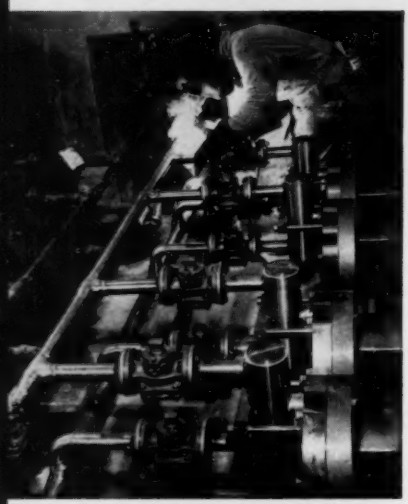

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PACKAGING & HANDLING EQUIPMENT, continued

Inserts, Drum

Rubber, corrosion proof. (171A)

. . . Drumserts will permit any standard 55-gal. drum or barrel to hold acids and other corrosive materials. Inserts are preformed, independent linings of neoprene or sheet rubber. Both installation and removal of Drumserts are simple. — *Automotive Rubber Co., Inc., Detroit 39, Mich.*

Package, Polyethylene

Increases packaging output, lowers cost. (171B)

. . . Bracon collapsible tubes and squeeze-to-use bottles of polyethylene, made by an extrusion technique, permit filling through large base openings for greatly increased packaging rates. They combine functional aspects of squeeze-bottles with lower costs of metal tubes while overcoming many drawbacks of both. Bottle bottoms are sealed with polyethylene disks which are fused by radiant heat and welded to the walls. Tube bottoms are fused under radiant heat and crimped tightly by cooled jaws. In conjunction with new package, 2-million-volt electron beam sterilizer is used to sterilize both package and contents.—*Bradley Container Corp., Maynard, Mass.*

Packer, Bag

Compacts material in minimum bag space. (171C)

. . . Material is well packed within minimum bag space when using Auger-matic bag packer. Powdered, granular, pellet solids are packed to uniform weight assuring tightly filled valve bags. Multiple-action model combines shaker with built-in scale. Shaker jolts bag during filling operation. Security clamp holds bag on filling spout regardless of entering force of material being packed. When packer shuts off, operator releases the security clamp, slips bag from the spout, tucks in the valve. Bag is then ready for shipment.—*Goddington Mfg. Co., Milwaukee 9, Wis.*

Packer, Bag

For hard-to-pack powders and granules. (171D)

. . . Packing multi-wall bags with Fluopacker filling and weighing machine is like squirting in liquid through a hose nozzle. With Fluopacker, air is used to fluidize powdery or granular solids so that they will flow readily—like liquid—through the filler tube, into the bag. Costwise, unit offers several advantages: with fluidized solids there's no need for moving parts to impel material into the bag (cuts maintenance costs); aeration of solids is much less than with previous methods (dusting and packed bulk are reduced, leading to savings in bag size); uniform fluidization permits more accurate cut-off at correct weight; production rates run from 1 to more than 20 bags per min., on either single or multiple-tube machines.—*St. Regis Paper Co., New York 17, N. Y.*

Packer, Vibratory

Handles containers up to 2,000 lb. capacity. (171E)

. . . Model VP-600 vibratory packer has a deck 48 x 48 in. with a weight capacity of 2,000 lb. It's used to increase net weight content of shipping containers. Packer is powered by "semi-noiseless" pulsating magnet. Variable control permits adjustment of vibration amplitude to desired degree. Packing action is instantaneous. Packer operates on 220-v., 60-cycle a.c. power, weighs 1,700 lb. complete. —*Syntron Co., Homer City, Pa.*

Pallet, Loading

Costs less, saves 8-10 hr. unloading time. (171F)

. . . Accopak pallet consists of a paper tube inserted in each end of a paper sling. Loaded pallet (up to 24, 80-lb. bags) is picked up by bayonet forks designed to fit any fork-lift truck. Unit load can be stacked in single, double or triple tiers without removal of pallet during storage of material —*American Cyanamid Co., New York 20, N. Y.*

Rack, Drum

Gravity feed, saves labor and space. (171G)

. . . Steel drum rack permits unloading either from downhill end or from side. As one drum is removed another one moves by gravity to replace it. Drums load on rack from uphill end. Rack, shipped knocked down in parts, has total capacity of 54 drums. Two men can completely assemble the rack in less than one hour.—*Johnson & Flaherty, Los Angeles 22, Calif.*

Shovel, Power

Handles materials in cramped quarters. (171H)

. . . Bulkmaster mobile power shovel handles bulk material in confined space, e.g. boxcars. With capacity of 11 cu. ft., shovel is suitable for loosely packed solids. Full shovel lifting speed is 6 sec.; dumping speed, 1 sec.; lowering speed 3 sec. — *Clark Equipment Co., Battle Creek, Mich.*

Shovel, Tractor

Gives better performance. (171I)

. . . Improved Payloader, model HFC, rear-wheel drive tractor-shovel combines features of special transmission with torque-converter drive. Results: improved performance, decreased maintenance. All transmission parts are completely interchangeable. — *Frank G. Hough Co., Libertyville, Ill.*

PACKAGING & HANDLING EQUIPMENT, continued

Shovel, Tractor

Outdoes performance of predecessors. (172A)

. . . HA model Payloader digs, lifts and carries twice as much as its predecessor. With payload capacity of 18 cu. ft. and struck load capacity of 14 cu. ft., productive capacity is increased from 50-100%. New model is also more maneuverable because it has a shorter turning radius. It can operate into and out of boxcars with ease. Torque converter drive assures fast operating cycles. — *Frank G. Hough Co., Libertyville, Ill.*

Shovel, Tractor

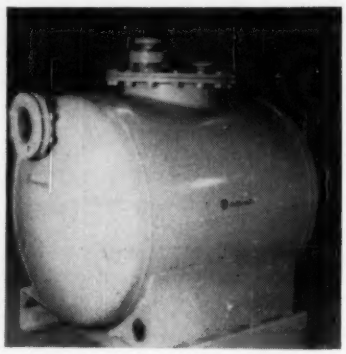
Speeds up bulk handling in plant, yard, car. (172B)

. . . Nimblefootedness is built-in feature of 12 cu. ft. Load-Plus tractor designed to speed up one-man handling of bulk materials. Machine's lifting capacity is 1,200 lb. During operation boom arms crowd bucket forward as it rises. Two double-acting, bucket-control pistons tilt bucket back to level position to avoid spilling. Single four-way hydraulic valve controls both boom arms and bucket. — *Jaeger Machine Co., Columbus, Ohio.*

Tank, Transfer

Pipeline on wheels. (172C)

. . . Portable storage-transfer tank offers efficient, economical substitute for expensive pipe-valve-pump systems. It's particularly adaptable where there are varying and intermittent requirements for heavy acids or industrial chemicals in different plant areas. As transfer tanks, units eliminate dangerous and cumbersome handling of carboys. They serve as temporary storage tanks during repair or cleanout of permanent storage equipment. Designs cover capacities from 200 gal. upward —mounted on either skids or casters.— *Heil Process Equipment Corp., Cleveland 11, Ohio.*



Trailer, Plastic

Mass produced, corrosion resistant. (172D)

. . . Plastic-bodied trailer is corrosion resistant and non-electrolytic. It can transport hides, lye, storage batteries without need for special precautions. Fiber glass and polyester resin plastic washes as easily as windowpane, is impervious to smells. Plastic is lighter than aluminum but has same strength and impact resistance. — *Strick Co., Philadelphia, Pa.*

Trucks, Fork

Operated on LPG fuel. (172E)

. . . Fork-lift truck powered by liquefied petroleum gas (LPG) is approved and listed by Underwriters' Laboratories. Standard model 3,000-5,000 lb. Carloader is factory modified for LPG operation. (LPG combustion fumes are adorless, colorless.) Engine has 8:1 compression ratio and special valves to avoid burnout.—*Clark Equipment Co., Battle Creek, Mich.*

Warehouse, Mobile

For modern freight, giant unit load. (172F)

. . . Mobilvan mobile warehouse smoothly combines the most economical aspects of trucking and railroad transportation and provides storage as well. Fitting three to a railroad flatcar, two to a conventional highway trailer or one to a city delivery truck they can be transferred either by fork-lift truck or straddle carrier.—*Clark Equipment Co., Battle Creek, Mich.*

Weigher, Batch

For program batching of liquids, bulk materials. (172G)

. . . Built around an SR-4 strain-gage load cell, line of model 140 Auto-Batch weighing equipment has simple design, low maintenance. System uses bin supported from load cell which is connected to an electronic indicator, recording controller and control relay box. It can handle batches from a few to thousands of pounds, from one to twelve different ingredients. Batching is done in single or repeat cycles. Weigher has automatic tare check system.—*Gilmore Industries, Inc., Cleveland 3, Ohio.*

• Pipes, Fittings and Valves

Bellows

Made of Teflon. (172H)

. . . Bellows of Teflon are furnished with companion flanges conforming to standard circles and numbers up to 125 psi. Units are chemically inert, corrosion- and heat-resistant. They're used as vibration dampers, expansion joints and connectors.—*Crane Packing Co., Chicago 13, Ill.*

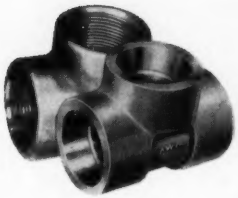
WATSON-STILLMAN FITTINGS DIVISION

H. K. PORTER COMPANY, INC.
P. O. Box 95, Roselle, New Jersey

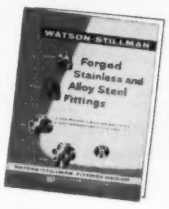
FORGED STEEL PIPE FITTINGS

Carbon Steel, ASTM A-105, Grade 2: Provide maximum resistance to pressure, heat, shock and vibration. Available in Screw-End Type in 2,000, 3,000, 6,000 lb. class; Socket-Welding Type for Schedule 40, 80, 160 and Double-Extra Heavy Pipe. Sizes ⅛" to 4" I.P.S. Send for Bulletin A-3-50.

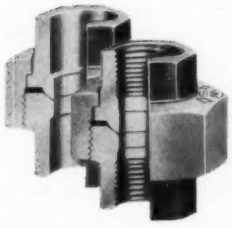
FORGED STAINLESS and ALLOY STEEL FITTINGS



Watson-Stillman high strength Screw-End and Socket-Welding Fittings are also available in a variety of alloy materials for high temperature and corrosive services. Sizes ¼" to 2" in same pressure classes as carbon steel fittings. Materials include stainless steel Types 304, 316, 347, 304-L; also 1¼% Cr–½% Moly, 2¼% Cr—1% Moly, and 4-6% Cr— and Monel. Bulletin S-1-55.



W-S FORGED STEEL UNIONS

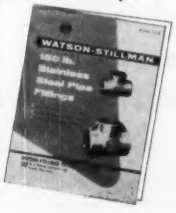


Designed to AAR specifications and manufactured in accordance with ASTM A-105, Grade 2, Watson-Stillman 3,000 lb. Forged Steel Unions are available in Screw-End and Socket-Welding Types, sizes ⅛" to 2". Outstanding features include steel-to-steel seating, ball-to-angle mating surfaces and cadmium plated nuts. Bulletin U-1.

W-S 150 lb. STAINLESS STEEL FITTINGS

Ideal for standard pressure services (300 psi cold non-shock and 150 psi steam pressure) requiring corrosion resistance or toughness at low temperatures. Available in Screw-End and Socket-Welding Types, sizes ⅛" to 2", Types 304 and 316 stainless steel.

Bulletin S-3-55.



SPECIAL FITTINGS

W-S CLAMP RING UNION

The W-S Clamp-Ring Union takes the effort out of piping installation. Only one wrench needed to tighten it because of self-locking bolt heads. Available in Screw-End, Butt-Welding and Socket-Welding Types.

TAB ORIFICE UNION

The orifice size is plainly stamped on the tab for positive identification.

Other special fittings to meet your specifications. Send us a drawing or sketch for quotation.

DOUBLE-ACTING AIR-ENGINE PUMP

A compact, lightweight hydraulic pump for many applications: For Hydrostatic testing; as a hydraulic pumping unit; to operate hydraulic jacks or machinery.

Simply connect the pump to your shop air line or field compressor. Delivers hydraulic pressures of 2,000, 4,000, or 6,000 psi.

Bulletin A-5

HAND PUMPS AND INDEPENDENT JACKS

W-S Hand Operated Pumps are available in single and double plunger types, with maximum pressure deliveries of 3,000, 6,000, 10,000 psi.

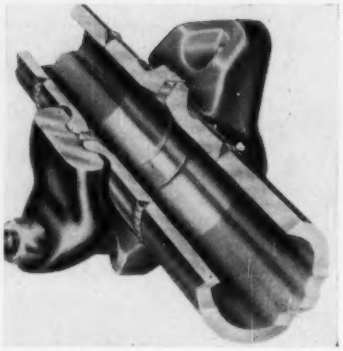
Hydraulic Jacks with independent pumps available in capacities of 20 to 500 tons. Simple, compact cylinder and ram, providing maximum rise with minimum overall height.

PIPES, FITTINGS & VALVES, continued

Connector, Pipe

Withstands more than pressure limits in heaviest pipe. (174A)

. . . Graloc pipe connector is "one-specification" connection for all piping applications and pressure ratings. All parts are fully interchangeable and reusable. You don't have to select gaskets, facings or bolts. Graloc connector has a two-bolt clamp and a stored energy seal. Clamp works against tapered shoulders on connecting hubs. Internal line pressure doesn't affect bolting load. Graloc is a leakproof seal for "any fluid at any temperature the pipe can carry." Standard connections come in 3 styles: butt welding, slip-on, threaded.—*Gray Tool Co., Houston 1, Tex.*



Damper, Slide

Withstands temperatures to 3,000 F. (174B)

. . . Silicion carbide slide damper for automatic flue control is replacing conventional fire clay dampers and outlasting them several times. Damper isn't subject to cracking under thermal differentials when flue is partly open. —*Electro Refractories & Abrasives Corp., Buffalo 2, N. Y.*

Disks, Rupture

Relieve at low pressure, suitable for corrosives. (174C)

. . . Models 1A and 1B rupture disks, available in 2- to 10-in. sizes, offer protection in the low-pressure range under corrosive conditions. Both models can be used on systems requiring rupture pressures from 8 to 100 psig. They're suitable for vessels containing such corrosive chemicals as H_2SO_4 fuming HNO_3, HCl acid.—*Black, Sivalls & Bryson, Inc., Kansas City 26, Mo.*

Fitting, Jacketed Cross

Forged construction gives better performance. (174D)

. . . Where flow characteristics are of major importance, forged-steel jacketed cross offers superior heat transfer and corrosion resistance because it's seamless. It's made in forged carbon steel, stainless steel and aluminum. Standard sizes range from ¾ to 12 in. for temperatures to 800 F. —*Jacketed Piping & Products Co., Pittsburgh 22, Pa.*

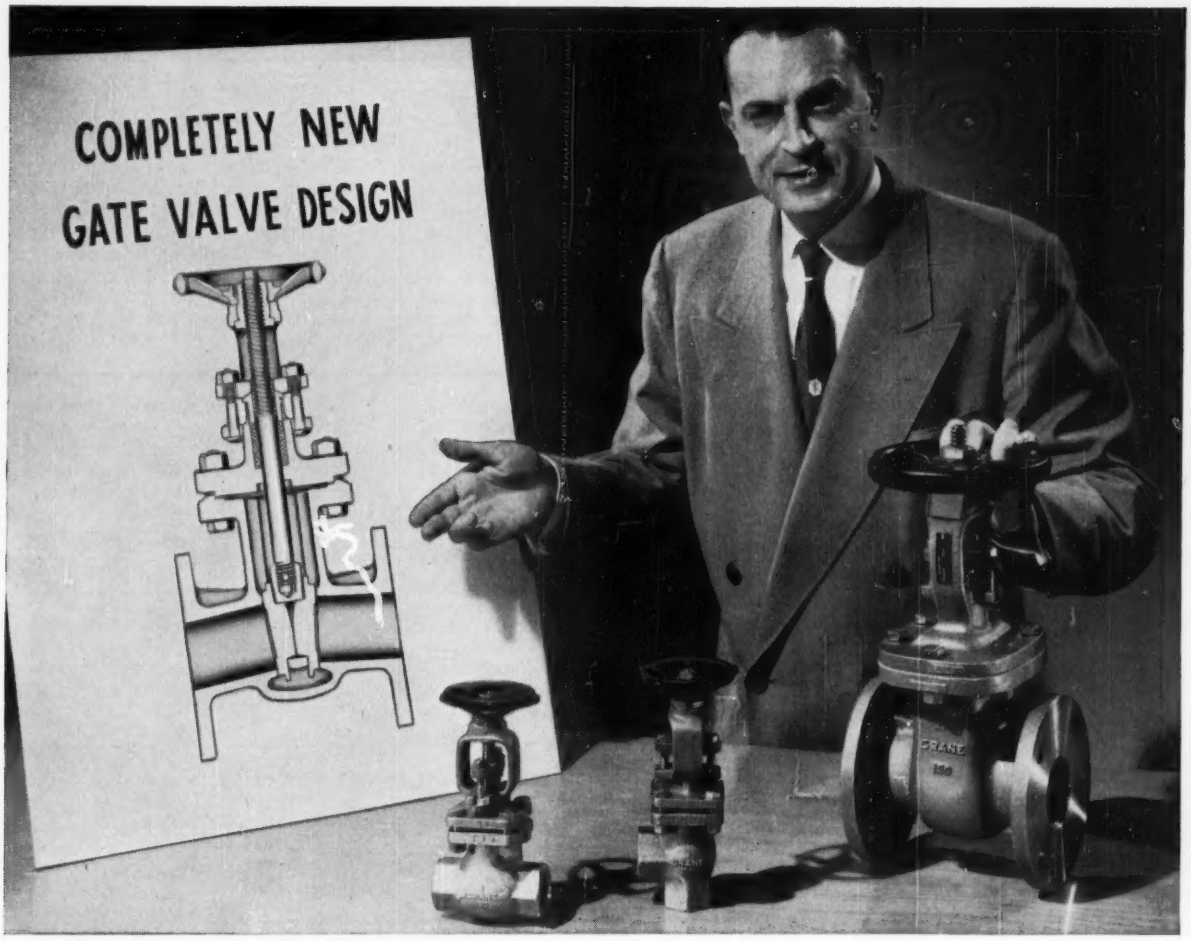
Fitting, Welding

Jacketed elbow. (174E)

. . . Jacketed elbow with extra-long radius is welding fitting available in sizes from ½ to 8 in. Long elbow is desirable where streamline flow of viscous materials is required.—*Red Jacket Co., Inc., Pittsburgh 22, Pa.*

For More Information . . .

For more information on any item, simply write its code number on one of the Reader Service postcards inside the back cover of this issue. Mail it and information comes to you from the manufacturer. You can also write directly to the producer at the address given. Or you can refer to the August 1954—July 1955 issues of CE by using the monthly index in the Process Equipment News department or the annual index in December. For speed and convenience, use Reader Service postcards.



New CRANE Corrosion-resistant valves in 18-8 SMo and Craneloy 20

Gate, Globe, Angle and Check Patterns

Few valves for process industries have ever received the quality treatment given this new Crane line—at prices you'll find O.K.

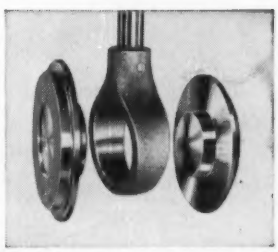
Note, for instance, the unique yet simple split-wedge disc construction in the gate valves. Those dual identical discs are free to rotate in their holder—the most effective design for resisting galling. The trunnion shape at the back of each disc assures even distribution of closing forces. You couldn't buckle them if you tried.

The globe and angle valves give equally outstanding control of corrosive fluids. A new type disc-stem connection, with minimum clearances, practically eliminates vibration. By placing seating load closer to seats, it provides easier, more accurate closure.

Check valves feature compact, thoroughly proved, non-slamming design.

Throughout, these valves are built for better service in your choice of Crane 18-8 SMo Stainless Steel or Craneloy 20. Both lines come with screwed or flanged ends.

ASK FOR THIS CATALOG—Full information including service suggestions given in circular AD-2080—available from your Crane Representative or by mail. Crane Co., General Offices: Chicago 5, Ill. Branches and Wholesalers everywhere.



New split-wedge disc in gate valves combines the benefits of free rotation with uniform seat load pressure.

CRANE CO.

VALVES · FITTINGS · PIPE
KITCHENS · PLUMBING · HEATING

CRANE'S FIRST CENTURY...1855-1955

PIPES, FITTINGS & VALVES, continued

Fittings, Stainless

In wide range of sizes are low cost. (176A)

. . . Low-cost, stainless steel fittings and couplings are now available—either in type 304 or 316 stainless—for quick assembly and disassembly of light stainless steel pipelines. Fittings have flared sleeves. Connections are made with triple sealing gaskets and pressed mild-steel, channel-type flanges with bolts. Only the sleeve and neoprene rubber in the gaskets contact the fluid in the pipe. No welding or precision pipe fitting is required. Construction of coupling allows for deflection, misalignment, expansion and contraction between two joined pipes while maintaining 500 to 1,000 psi. hydrostatic pressures.—*R. H. Baker & Co., Huntington Park, Calif.*

Flanges and Fittings

For polyethylene pipe. (176B)

. . . Positive seal and easy installation are claimed for series of flanges and couplings for polyethylene and fluorocarbon pipe. Ingenious combination of induction heating components fuses fitting and pipe into solid unit, eliminating need for flame welding. — Flange is fitted with small wire rings acting as heating elements where the fitting joins the pipe. Portable 200-w. induction heater is clamped around the fitting's neck. Heat induced in the rings melts the plastic surrounding the wire and fuses the two parts.—*Columbia Basin Plastics Co., Portland, Ore.*

Gasket, Rupture-Proof

Cuts pipeline turbulence. (176C)

. . . With Free Flow gasket there's no danger of rupture at high temperature due to entrapped air between insert and envelope. Gasket makes full contact with pipe flanges, doesn't restrict flow. Insert extends to full depth of gasket envelope, eliminating air space. Gasket is fabricated of chemically inert Teflon.—*Crane Packing Co., Chicago 13, Ill.*

Head, Vapor-Collection

Eliminates vapor loss. (176D)

. . . Vapor collection head on filling spout enables refinery to load tank trucks without vapor loss. As truck fills, vapor vents into collection head connected to reclaiming system. Head's transparency permits loader to see when compartment is full. When all L. A. refineries are equipped with vapor collection heads, hydrocarbon emissions will be reduced 17 tons per day.—*General Petroleum Corp., Los Angeles, Calif.*

Hose, Checklist for

Helps get satisfaction from industrial hose. (176E)

. . . Checklist compiled by J. A. Muller of Thermoid Co. can help you get more satisfactory performance for your industrial hose. List includes information on material carried, hose size, temperature, pressure, suspended solids, bending radius, length, twisting, operating cycle, couplings, damage protection and working conditions.—*Thermoid Co., Trenton 6, N. J.*

Hose, Flexible

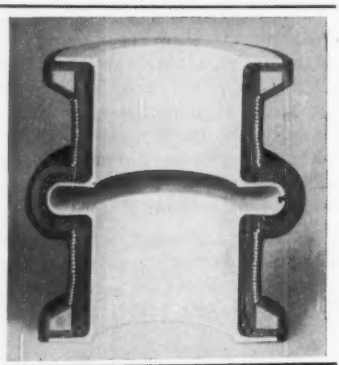
Made of polyethylene and wire. (176F)

. . . Two plies of polyethylene film enclose a spiral, stainless steel wire in this flexible hose. For added reinforcement, hose can be armored with flexible stainless steel braid or heavy plastic outer sleeve. Light, flexible, chemically resistant and durable, hose is used to transfer chemicals, gases, liquid food products.—*Plastics Div., Visking Corp., Terre Haute, Ind.*

Joints, Expansion

For use with trademarked piping of special material. (176G)

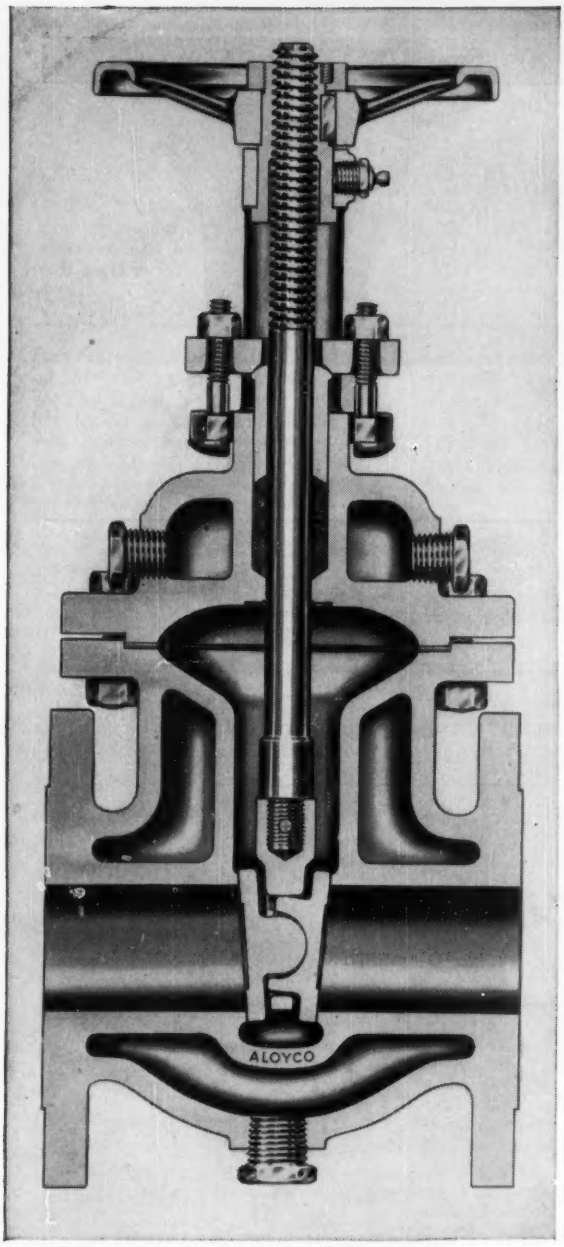
. . . Rubber expansion joint 209 is designed for use with piping and flanges made by Haveg Corp. and Duriron Co. Joints are of the high-grade rubber compound combined with plies of sturdy cotton duck and reinforced steel wire. Steel rings in flange ends of joint permit tightening of connections without shearing the joint. Neoprene construction is used if the joint or line is in contact with oil or petroleum derivatives. On service harmful to rubbers, Teflon liner is used.—*Garlock Packing Co., Palmyra, N. Y.*



Pipe, High-Impact

Withstands high working pressures. (176H)

. . . Rigid Koroseal pipe is tough, durable, withstands rough handling under severe operating conditions. It's chemically resistant, odorless, won't corrode. Light-weight pipe costs less than equivalent sizes of stainless steel pipe.—*Industrial Products Div., B. F. Goodrich Co., Akron, Ohio.*



Cross-section shows how jackets extend to edge of flanges and include stuffing boxes on this Aloyco 1105 Jacketed Gate Valve. Also shown are the non-fouling, ball-and-socket split-wedge disc and mar-proof rocker-type gland plate and follower.

Now-

fully jacketed valves put the heat on slow-moving corrosives

Does your plant handle corrosive fluids that slow down or solidify under normal temperatures?

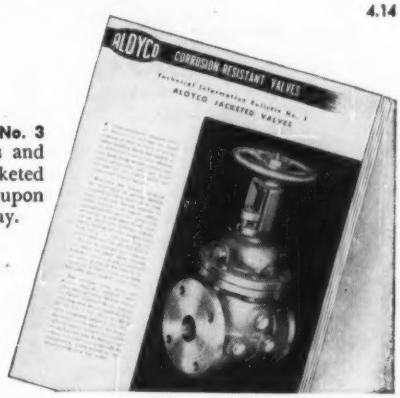
Then you're in line to benefit from the heat-holding design of Aloyco jacketed Gate, Globe and Check valves. Besides having all the Aloyco features shown at left, they're the only high alloy valves on the market to be *completely jacketed.*

They keep valves at higher temperature than steam tracing systems, and provide more uniform, less hazardous heating than thermal electric methods. You'll find them especially useful in line processing of rosin, resins, tars or tar oils, pthalic or maleic anhydrides, molten sulphur and other viscous liquids.

We'll be glad to arrange for a trial installation of Aloyco jacketed valves in your plant. Write the Aloyco Corrosion Engineering Service for further information. **Alloy Steel Products Company, Inc., 1323 West Elizabeth Ave., Linden, N.J.**

4.14

Fact-filled Bulletin No. 3 lists specifications and uses of Aloyco Jacketed Valves. Send coupon for your copy today.



25TH ANNIVERSARY
Longer Lasting
ALOYCO
VALVES
1ST IN CORROSIVE SERVICE

ALLOY STEEL PRODUCTS COMPANY, INC.
1301 West Elizabeth Avenue
Linden, New Jersey

Gentlemen:

I am interested in Aloyco jacketed valves. Please send me a free copy of your Bulletin No. 3.

Name_____

Firm_____

Address_____

City_____ Zone_____ State_____

PIPES, FITTINGS & VALVES, continued

Pipe, Plastic

Tough, resists impact, favorable cost. (178A)

. . . Dur-Ace rigid plastic pipe handles most common corrosives. Other highlights include: light weight, odorless, tasteless, non-contaminating, resistance to inorganic acids and alkalis, limited resistance to organic solvents, low rate of moisture adsorption, good strength and chemical resistance from —40 to 170 F.—*American Hard Rubber Co., New York 13, N. Y.*

Pipe, Porcelain-Lined

Joined without impairing coating. (178B)

. . . New porcelain pipe-joining method (1) doesn't impair coating characteristics, (2) eliminates high-cost custom building of glass-lined pipe, (3) cuts installation and production costs, (4) makes high temperature applications practical. Pipe is cut to size so that ends are square. Cut end of each section is fitted with a glass-coated insert that's rolled or expanded into the pipe end. Pipe ends are butted and oxy-acetylene welded with high alloy filler rod.—*Barrows Porcelain Enamel Co., Cincinnati, Ohio.*

Pipe and Fittings, Plastic

Installed throughout plant. (178C)

. . . Installation of 2-in. polyvinyl chloride intake line on H_2SO_4 storage tank marks one step in complete changeover from metal to plastic pipe and fittings at Globe Chemical Co., Cincinnati. Globe uses piping to convey mainly 77-96% sulfuric, 61.4% nitric, 37-38.5% muriatic, 75-85% phosphoric.—*Tube Turns Plastics, Inc., Louisville 1, Ky.*

Pipes and Ducts

Corrosion resistant. (178D)

. . . Dense, homogenous nature of DuVerre #11 resin-bonded fibrous-glass pipes, ducts, fittings makes delamination almost impossible. Vent pipe is installed with standard joints. —*DuVerre, Inc., Hamburg, N. Y.*

Trap, High-Pressure

For gas systems. (178E)

. . . Forged steel trap drains water from compressed air or gas systems up to 3,000 psi. where no gas loss is permissible. At 2,000 psig., capacity is 2,000 lb. per hr.—*Armstrong Machine Works, Three Rivers, Mich.*

Trap, Steam

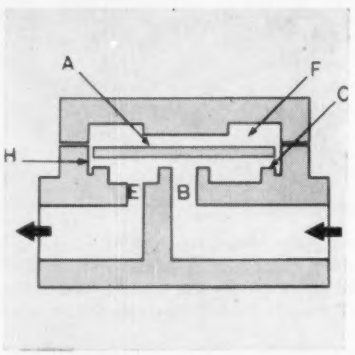
Used where load, pressure vary. (178F)

. . . Bucket steam trap employs balanced valve principle. Trap operates through pressure range up to 250 psi. without adjustments, changing orifices or valves. — *Perfecting Service Co., Charlotte, N. C.*

Trap, Steam

Operates thermodynamically to close tight on no load. (178G)

. . . This steam trap uses kinetic energy of steam to close the valve. Simple design is free of usual valve mechanisms. Trap can vent large volumes of both air and air-steam mixtures. It closes tight on no load and operates against a back pressure up to 50% of its inlet pressure. Condensate discharges at saturated steam temperature as rapidly as it forms. Unique valve head, consisting of a solid heat-treated stainless-steel disk, is only moving part. Same head and seat are used for pressures up to 600 psi. and temperatures to 950 F.—*Sarco Co., Inc., New York 1, N. Y.*



Trap, Steam

Operates on low condensate load. (178H)

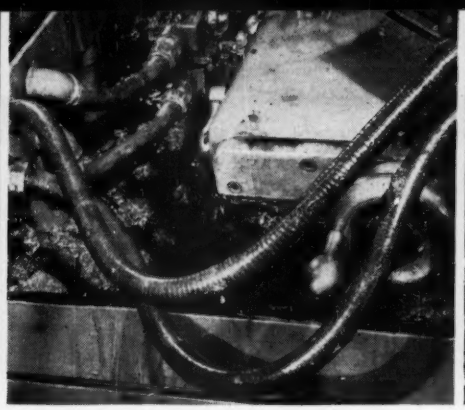
. . . On low, medium and high-pressure steam service, Hydro-Flex trap operates efficiently even handling extremely low condensate loads. Trap has reasonably high capacity. All working internal parts are made of heavy stainless steel to withstand severe operating conditions. The Hydro-Flex operates at 2,500 psi at a temperature of 1,100 F.—*Strong, Carlisle & Hammond Co., Cleveland 13, Ohio.*

Tubing, Nylon

Flexible, tough, tested for 2,500 psi. bursting pressure. (178I)

. . . Nylaflow, nylon tubing, is available for handling air, gas or liquid flows. It's particularly adaptable to lubricant, hydraulic, fuel, oil and coolant lines. Also, it's suited for process lines handling chemicals and solvents. It flexes without fatigue, withstands vibration. It resists chemicals with the exception of formic acid and concentrated mineral acids or phenol. Under steady use it must be protected from exposure to sunlight and prolonged temperatures over 180 F.—*Polymer Corp. of Pa., Reading, Pa.*

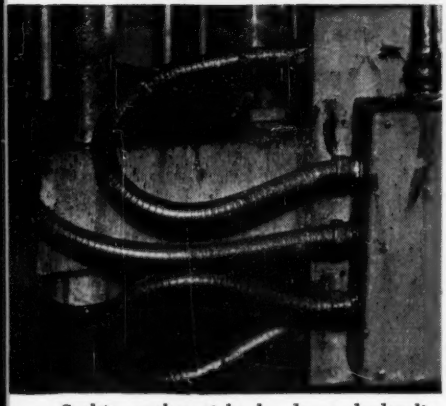
Sealtite resists corrosive mixture of powdered calcium sulphate, magnesium oxide and magnesium chloride.



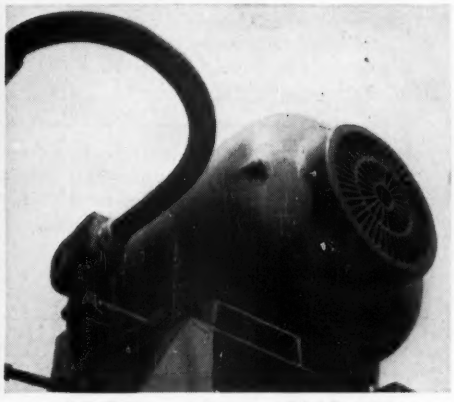
Sealtite protects grinder motor leads . . . flexes continuously under abrasive coat of metal dust, oil and coolant.

In paper mill's steamy air, Sealtite is covered with oil and wet pulp containing chlorine and caustic soda.

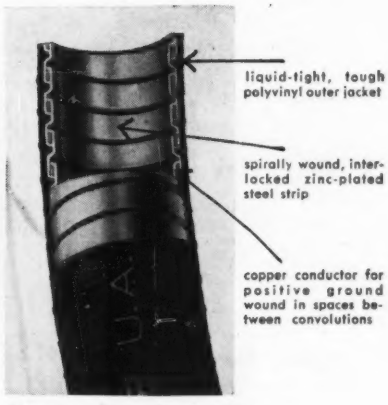
Give the dirtiest jobs to SEALTITE flexible, liquid-tight conduit



Sealtite makes tight bends on hydraulic press, keeps motor leads free from oil, grease and water.



Sealtite keeps weather out of leads to outdoor pump motor.


liquid-tight, tough polyvinyl outer jacket
spirally wound, interlocked zinc-plated steel strip
copper conductor for positive ground wound in spaces between convolutions

Cutaway shows construction details of Sealtite Type UA.

Sealtite is made in two types. Specifications in table below. Type UA is approved by Underwriters' Laboratory for service in wet spots. Available in light gray as well as black.

Type EF† meets JIC standards. Extra flexible . . . ideal for machine tool applications. Standard stock colors: black, and machine tool light gray at no extra cost.

SEALTITE TYPE E. F.

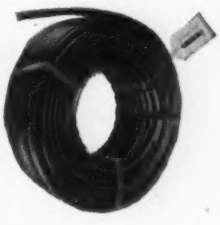
Trade Size (In.)]	INSIDE DIAMETER (Inches)		OUTSIDE DIAMETER (Inches)		Appr. Inside Bend Diam. (In.)	Est. Wgt. (Lbs. Per 100 Feet)	Feet Per Std. Coil
	Min.	Max.	Min.	Max.			
⅜	.485	.505	.690	.710	5	24.0	250
½	.620	.640	.820	.840	6	29.0	200
¾	.815	.835	1.030	1.050	9	38.5	200
1	1.030	1.055	1.290	1.315	10	68.0	100
1¼	1.370	1.395	1.630	1.655	13	86.0	100
1½	1.575	1.600	1.875	1.900	15	117.0	50
2	2.020	2.045	2.350	2.375	17	155.0	50
2½	2.480	2.505	2.850	2.875	20	198.0	—
3	3.070	3.095	3.470	3.500	27	282.0	—
4	4.000	4.050	4.465	4.500	34	414.5	—

SEALTITE TYPE U. A.

Trade Size (In.)	INSIDE DIAMETER (Inches)		OUTSIDE DIAMETER (Inches)		Appr. Inside Bend Diam. (In.)	Est. Wgt. (Lbs. Per 100 Feet)	Feet Per Std. Coil
	Min.	Max.	Min.	Max.			
⅜	.484	.504	.690	.710	8	30.0	200
½	.622	.642	.820	.840	10	36.6	200
¾	.820	.840	1.030	1.050	15	48.2	150
1	1.041	1.066	1.290	1.315	18	87.7	100
1¼	1.380	1.410	1.630	1.660	21	116.5	50

Sealtite* flexible, liquid-tight conduit gives wiring maximum protection against oil, grease, water, dirt, chemicals, corrosive atmospheres and weather. Nothing gets through its tough, polyvinyl outer covering. It stands up under continuous flexing . . . absorbs vibration, connects moving parts . . . connects misaligned outlets . . . prevents burn-outs. For long runs or short leads it's easy to install . . . saves the time it would take you to cut, bend and fit rigid conduit.

ELECTRICAL WHOLESALERS stock Sealtite in easy-to-handle coils. Buy it this way in long lengths . . . cut it on the job without waste. Your electrical wholesaler also stocks liquid-tight connectors. For more information write for Sealtite bulletins. Address *The American Brass Company, American Metal Hose Branch, Waterbury 20, Conn.*



*Trade Mark
†Pat. App. For

55162

SEALTITE FLEXIBLE, LIQUID-TIGHT CONDUIT

AN **ANACONDA®** PRODUCT

Inquiry Code Number for this advertisement—179

PIPES, FITTINGS & VALVES, continued

Valve

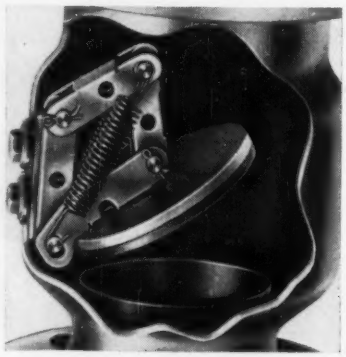
For 150-lb. service, seatless. (180A)

. . . Featuring lightweight, fabricated construction, new Hemco valve provides full flow with minimum pressure drop, turbulence and aeration. It's claimed to include and improve upon ruggedness, simplicity, flow characteristics of gate valve, cleanliness of plug valve. Valve has rising and falling plug that terminates in an O-ring sock. Wide choice of body metals and O-ring compounds satisfies most process needs. Valve is available for various types of connections.—*Hurt Corp., Pasadena, Calif.*

Valve, Check

Closes without slamming, has minimum flow resistance. (180B)

. . . Through unique spring action check valve closes without hammering or chattering. Swing-type flapper is closed by knuckle action with two springs acting at joint of the knuckle. Spring tension on the flapper closes the valve an instant before reverse flow commences, eliminating slamming. When flapper is closed, mechanical advantage of knuckle multiplies spring pressure, holding flapper tightly against seat. As flapper swings open, spring pressure actually decreases due to knuckle construction. Thus there's minimum restriction to maximum flow through valve.—*W. R. Ames Co., San Francisco, Calif.*



Valve, Plug

Has renewable packing sleeve. (180C)

. . . Available for first time in the U. S. is a plug valve with a renewable packing sleeve that can be retightened in use or replaced quickly and easily. Plug can't jam and there's an unobstructed straight-through passage. Sleeve-packed plug cocks are working on steam at 800 psi. and 900 F.; saturated steam at 2,000 psi.; benzine at 3,000 psi.; chemical plant gases and liquids at pressures up to 6,000 psi. Cocks can also be used as water-gage shut-offs.—*Klinger Corp. of America, Hoboken, N. J.*

Valve, Plug

Seizing-free. (180D)

. . . Teflon plug makes taper plug valve free of seizing from −65 to +250 F. and pressures to 100 psi. Valve doesn't require any lubricant. Angle 2, 3, and 4-way types with or without drain, aluminum alloy or stainless steel body are available. — *Republic Mfg. Co., Cleveland 2, Ohio.*

Valve, Relief

Doesn't leak below release pressure. (180E)

. . . Pop-off relief valve seals tight with no leakage below release pressure. Seal is resilient member fitted into poppet head which seats into a spherical section of valve body. Spherical seat obviates need for close stem alignment and close-sliding fits. Adjustment is internal and can't be tampered with. — *James-Pond-Clark, Pasadena 8, Calif.*

Valve, Slurry

Throttles flow by liner compression. (180F)

. . . Red Jacket sleeve valve provides smooth control of slurry flowing in pipelines. Flexible sleeve (pure gum rubber) within rigid metal body is compressed by externally applied air or hydraulic pressure to throttle flow as desired. Valve can be used to control common fluids such as water, gas and oil as well as solid suspensions. Valve is available in a wide range of sizes.—*Red Jacket Co., Inc., Pittsburgh 22, Pa.*

Valve, Toggle

Operates on high pressure or vacuum. (180G)

. . . Designed for direct panel mounting without modification, quick-acting toggle valve operates up to 1,000 psi. or on high vacuum. Hardened steel cam holds vacuum leakage—during opening and closing—to less than 0.01 micron per liter per cycle. Adjustable cap nut allows seat to close tightly when operating lever is at right angles to the stem. Direct panel mounting is possible without modification.—*Hoke, Inc., Englewood, N. J.*

Valves

Corrosion resistant, low cost. (180H)

. . . Line of Ni-Resist valves checkmates high corrosion costs. Valves are used to handle pulp and paper mill liquors, oil refinery acids, alkalis and sludges, caustic soda, pickling solutions, sea water, etc. Ni-Resist alloy, similar to gray cast iron and stainless steels, possesses far greater corrosion and heat resistance than either.—*Wm. Powell Co., Cincinnati, Ohio.*

Valves, Alloy

New design improves performance. (181A)

. . . Complete line of alloy gate, globe and angle valves is corrosion resistant and tops in performance. Valves are constructed of Crane 18-8S Mo stainless steel or Craneloy 20 high-nickel, high-chromium stainless steel. Teflon packing is used on all valves. Gate valves have unique exclusive split-wedge disk design. In globe and angle valve disk-stem construction, stem extends much farther into the disk, with a minimum amount of radial clearance. Disk chattering is eliminated. Valves are built with screw ends, ¼ to 2 in; and with flange ends, ¼ to 6 in. —*Crane Co., Chicago 5, Ill.*

Valves, Diaphragm

Plastic-bodied. (181B)

. . . Saunders patent diaphragm valves are made with bodies of PVC or Uscolite styrene copolymer. In PVC, sizes run from ¼ to 2 in; in styrene copolymer they run up to 3 in.—*Hills-McCanna Co., Chicago 18, Ill.*

Valves, Dry Plug

Have coated plug. (181C)

. . . Stock dry plug valves have Hycar-coated plug. Operating range: —40 to +200 F. Valves are available as either wrench, handwheel or gear-operated.—*Wedgeplug Valve Co., Inc., New Orleans, La.*

Valves, Stainless Steel

Offered at lower cost. (181D)

. . . Line of Nordstrom valves—using chrome-plated plugs—is lower in price than previous stellite-protected stainless steel valves. Valves are recommended for variety of chemical plants. Chrome plating backed by stainless steel offers protection against scoring, galling and other effects of corrosion. Valves are offered in same sizes available in manufacturer's higher-priced line.—*Rockwell Mfg. Co., Pittsburgh 8, Pa.*

Valves and Fittings

Made of plastic, cost less. (181E)

. . . Luncor line of valves and fittings is claimed the first with all-molded construction. Molding process gives PVC material exceptional strength, protects its natural corrosion resistance, lowers cost. Y-type globe valve is suitable for 125 psi. and 150 C. And it will be priced lower than stainless steel and other alloy valves. Fittings include caps, couplings, plugs, unions, reducing bushings. — *Lunkenheimer Co., Cincinnati 14, Ohio.*

• Process Equipment

Agitator

Low-cost, versatile unit. (181F)

. . . Liquids up to 2,000 centipoises viscosity and products containing semi-solids are handled with ease by the Unimixer agitator. Available in sizes 1 through 5 hp., the Unimixer mixes, stirs, blends, dissolves, aerates and suspends; can thin, color and tint and help absorption of gases. Pedestal and drive are integral.—*Patterson Foundry & Machine Co., East Liverpool, Ohio.*

Chlorinator

High-capacity model. (181G)

. . . High-capacity, solution-feed-type chlorinator has a corrosion-proof polymer-impregnated fibrous-glass cabinet that never needs painting. Unit is used for municipal water-works service, controlling algae and treating waste streams. Six metering tube and float combinations provide a range of chlorine gas feeding from 100 to 8,000 lb. per day. Rate valve controls rate of chlorine gas injection.—*Fischer & Porter Co., Hatboro, Pa.*

Clarifier, Flotation

Removes both floatable and settleable solids. (181H)

. . . Aeroflotor flotation unit removes both floatable and settleable solids from water simultaneously. Influent to the machine is aerated under pressure in the air saturator. On pressure release, dissolved air comes out of solution as tiny bubbles. After entering the machine, these bubbles adhere to suspended particles in the influent, floating them to the surface. Settleable solids falling to the bottom are scraped into the sludge collection pit for removal.—*Graver Water Conditioning Co., New York 11, N. Y.*

Classifier, Hydraulic

Delivers sharply sized fractions from diversified feed. (181I)

. . . More effective use of hydraulic water enables Jet Sizer to split diversified feed into clean fractions sized within narrow limits. Hindered-settling hydraulic classifier sizes and grades solids that are finer then eight mesh. Classification is done within a number of pockets of equal area. Half-sized pocket scalps out coarse particles ahead of classification banks. Pocket arrangement can be in series or in transverse banks of two, three or four abreast. Sized fractions are discharged continuously through a valve mechanism which is controlled pneumatically. Jet Sizer is available with any number of pockets from 1½ to 21½.—*Dorr-Oliver Co., Stamford, Conn.*

PROCESS EQUIPMENT, continued

Cover, Filter

Operated hydraulically, quick opening. (182A)

. . . Hydraulic operation of cover is included on Niagara line of vertical and horizontal filters. Resultant uniform pressure makes for even seating and reduced wear. On horizontal filters new cover is standard equipment.—*Niagara Filters Div., American Machine & Metals, Inc., East Moline, Ill.*

Covers, Tank

For acid tanks. (182B)

. . . Tank covers for acid process tanks are made of Rigidon plastic. In sizes up to 18 ft. dia., they are light weight, have good structural strength at elevated temperatures.—*Heil Process Equipment Corp., Cleveland 11, Ohio.*

Crusher

Crushes all types of wax. (182C)

. . . Supreme crusher handles materials ranging from the softest low-melting paraffin wax to the hard natural waxes, at rates up to 500 lb. per min. using a 5 hp. drive. Crusher reduces slabs of wax to desired lump size without gumming or sticking. Temperature rise during crushing is so low that no cooling is needed; there's no solids buildup. Crusher also handles varnishes, DDT, maleic anhydride.—*Franklin P. Miller & Son, Inc., East Orange 1, N. J.*

Crusher

Gives greater particle size reduction. (182D)

. . . Large tonnages of fine particles—larger than those from most crushing methods—can be produced by Gyradisc crushing using Gruender reduction method. Crusher alternately impacts and releases a thick mass of material. Feed is intimately mixed so that large particles uniformly distributed throughout the mass prevent packing and assure high output. Unit is adjusted easily to give desired product size.—*Nordberg Mfg. Co., Milwaukee 1, Wis.*

Cutter, Pellet

Reduces extruded plastic to pellets. (182E)

. . . Uniform, dust-free plastic pellets are produced by the 700 line of cutting machines. Rod coming from the extruder is cut cleanly without forming feathers. Cutting machine can be equipped with supplementary pulling, stretching and feed rolls.—*Taylor-Stiles & Co., Riegelsville, N. J.*

Cyclone, Ceramic

Resists heat, corrosion on wet classification jobs. (182F)

. . . P50 Dorrclone separates nonabrasive, relatively fine feed slurries in the 10 to 20 micron range. It's particularly applicable where feed is hot or corrosive since the 50 mm. dia. cone is made entirely of porcelain. Unit successfully classifies clay and calcium carbonate slurries; handles other jobs in food processing.—*Dorr-Oliver, Inc., Stamford, Conn.*

Cyclone, Revamped

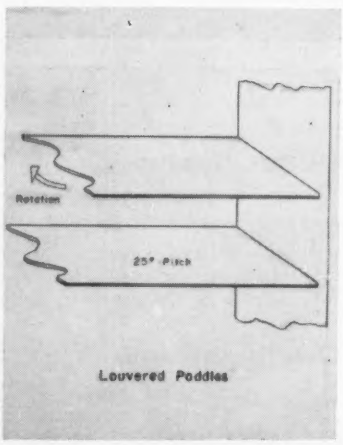
Built with removable rubber lining. (182G)

. . . Aiming for longer life and lower maintenance costs, manufacturer has redesigned Standard 6, 12, and 24 in. Dorrclones. Replaceable molded rubber inserts are expected to increase the operating life of sections not previously lined. Sections will be easy to install and less costly than equivalent parts in the old design.—*The Dorr-Oliver, Inc., Stamford, Conn.*

Decantation

New process speeds settling in big decanters. (182H)

. . . Gelsol process can be applied to suspensions of insoluble settleable solids in liquids. The process is equally effective on individual particles or flocculated fine solids; accelerates settling rate and compacts the sludge. Solid blades, preferably curved, or grills forming a sharp angle with the horizontal plane move slowly through the liquid. Inclined blades produce a vertical force component that, added to the force of gravity, improves settling. Slurry deflection also contributes to improvement in settling. In the compression zone, blades liberate trapped water producing a more concentrated sludge. Patent applications for Gelsol process are pending in the U. S.—*Chemical Projects Associates, New York 20, N. Y.*



Diffuser, Water

For ion exchange. (182I)

. . . Water diffuser for cation and anion exchangers prevents windrowing and shifting of the resin bed. Individual diffusers are perforated plastic cylinders 5 in. high by 6 in. dia.—*Permutit Co., New York 36, N. Y.*

Disperser, Disk

Emulsifies, disperses without heating. (183A)

. . . Disk disperser or colloid mill makes emulsions using less expensive raw materials. Use of knives revolving between perforated plates reduces material to fine consistency without generating heat. Disperser provides better-looking, smoother product; increased yield; produces improved product performance. Its over-all size is 53x13x21 in. Drive is 15 hp., 1,800 rpm. motor. —*Cazenovia Precision Machine Co., Inc., East Aurora, N. Y.*

Disperser, Gas

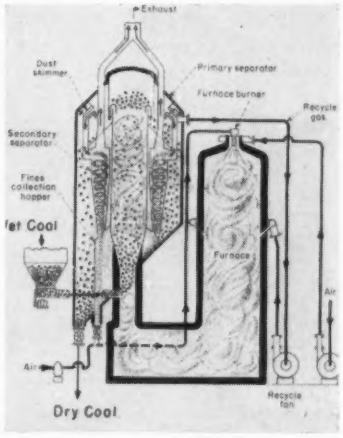
Upgrades pressure reactions. (183B)

. . . Dispersimax agitator improves autoclave performance and promotes chemical reactions between gases, liquids and solids—by forcing small gas bubbles at high velocity into and throughout catalyst-carrying liquid. Agitator decreases reaction time, permits lower reaction pressures, lowers costs in plant-size equipment.—*Autoclave Engineers, Inc., Erie, Pa.*

Dryer

Dries wet solids uniformly, rapidly by turbulent gas. (183C)

. . . Conceived originally for drying coal, the Parry dryer removes surface, inherent or combined moisture from many materials that can be entrained pneumatically. It does the job rapidly and safely; is reliable, and economical to install, operate and maintain. Parry dryer transfers heat rapidly by entraining particles turbulently in a stream of hot inert gas. Since the individual particles travel slower than the conveying media they are continually exposed to a rapidly changing atmosphere. High rates of heat transfer permit use of high-temperature drying gases without deleterious effects on particles. Surface moisture is removed almost instantly, inherent moisture within seconds.—*Silver Engineering Works, Denver 5, Colo.*



Dryer, Drum

Pilot unit for solids. (183D)

. . . Compact, rotating drum dryer can dry up to 3 tons per hr. of granular solids, needs only 3 x 5½ ft. of floor area and 6 ft. head room. Rate of feed and rotational speed can be controlled to satisfy drying needs. Dryer operates with either Bunker oil or gas.—*Roberts & Schaefer Co., Chicago, Ill.*

Dryer, Drum

For glue, gelatin. (183E)

. . . Continuous, single-drum dryer for glue and gelatin dries product quickly forming a heavy, dense product comparable to air-dried glue. Variable drum speed and temperature controls allow glue of desired quality to be produced.—*Buflovak Equipment Div., Blaw-Knox Co., Pittsburgh, Pa.*

Dryer, Spray

Portable, for small-scale production. (183F)

. . . Portable spray dryer for small-scale production is compact, easy to handle; has built-in electric and direct-fired gas heaters. Electrical system is designed to simplify change-over from one voltage system to another. Unit also has a new hydraulic drying chamber—lid removal.—*Nerco-Niro Spray Dryer Div., Nichols Engineering & Research Corp., New York 5, N. Y.*

Evaporator

Boosts efficiency by preventing scale formation. (183G)

. . . Self-cleaning Sebava evaporator does two-in-one job: prevents scale formation, lowers steam and power consumption. Heat transfer surface constructed of flat diaphragms—cleaned continuously by revolving stainless steel wipers—does first job. Thermal compression—produced by Roots-Connersville compressor pulling a vacuum on the evaporator body and discharging hot vapor to diaphragms at slightly above atmospheric pressure—does second job. Evaporators are used to produce distilled water from sea, well and river water; concentrate spent sulfite pulping liquor, caustic soda, furfural liquor; crystallize sodium chloride. To withstand corrosives, units are fabricated of resistant materials. Over-all size is small, installation is compact. Simple and rugged design keep maintenance low. Parts are standard design and readily interchangeable. Cost of the unit is competitive with other evaporators. Any price differentials are claimed to be more than offset by operating efficiency and economy. Units will be manufactured in this country with initial deliveries of 4-6 months. Later this will be reduced substantially.—*Roots-Connersville Blower Div., Dresser Industries, Inc., Connersville, Ind.*

PROCESS EQUIPMENT, continued

Extruder, Resin

Produces wide range of shapes in reinforced plastics. (184A)

. . . With Glastruder machine wide range of cross-sectional shapes is made, paralleling those produced by metal and thermoplastic extrusion techniques. Manufacturing tolerances are normal for this type of material; finish is commercially acceptable as stock comes from machines. Fibers, resin types, catalysts can be handled to produce almost any specific property. Prices for finished products are generally under those for comparable Monel, ceramic, rubber-coated material. Equipment size and complexity do not increase with cross-sectional area being extruded.—*Glastrusions, Inc., Santa Ana, Calif.*

Filter, Pan-Type

For phosphoric acid. (184B)

. . . Pilot installation of pan-type filter at Jefferson Lake Sulfur Co., Wendell, Idaho, removes from phosphoric acid up to 180 lb. of gypsum per sq. ft. per hr. Unit recovers 96% of available P_2O_5. Cake is discharged by dumping from inverted pan aided by a snap blow. No heel is left on cloth and organic slimes are removed by high-pressure sprays to prevent blinding. Manufacturer claims filter uses less floor space and shorter pipes, is lower in cost than other pan filters.—*Eimco Corp., Salt Lake City, Utah.*

Filter, Pilot Pressure

Helps select right production filter. (184C)

. . . The Pronto-Junior miniature pressure filter was designed to help you select the proper filter for production requirements. It gives specific rates and variation of flow rate as a function of the differential filtering pressure and the throughput. Designed for precoat filtration, it also helps evaluate filtration fabrics.—*American Plant Equipment Co., New York 1, N. Y.*

Filter, Small

High capacity, easy to service. (184D)

. . . Using either a completely new stainless-steel cloth-bag element or porous stone, the Sel-Rex Little Giant filter gives continuous capacity in the range of 800 gph. It has a 32-in. dia. at the base and requires only 50 in. of head room and 15 min. cleaning time. —*Bart-Messing Corp., Belleville, N. J.*

Flocculator

For water treatment. (184E)

. . . Spirol-Mix flocculator, a vertically mounted agitator with variable-speed drive (1) avoids short-circuiting of flow, (2) provides decreasing rate of agitation as floc forms, (3) produces uniform roll-mix action in same direction as water flow.—*Graver Water Conditioning Co., New York 11, N. Y.*

Generator, Ultrasonic

For plant and lab. (184F)

. . . Wide-range, 400-w. ultrasonic-energy generator, together with variety of transducers, is used for degreasing, emulsifying, impregnating, degassing, dispersing, extracting.—*Rich-Roth Laboratories, Hartford, Conn.*

Head, Reflux

Accurate under severe conditions. (184G)

. . . A complete line of electrically operated automatic reflux heads gives accurate, day-in, day-out performance. Ratio control is not affected by changes in boil-up rate or by heat losses in the head under all conditions of distillation. Usable with various types of condensers, it comes in sizes ranging from 2 to 36-in. dia.—*Distillation Engineering Co., Livingston, N. J.*

Heat Transfer Machine

Adjusts to optimum film thickness. (184H)

. . . Processing involving the transfer of heat can be done with films adjusted to optimum thickness using the Ajust-O-Film machine. With this centrifugal, thin-film unit extremely heat-sensitive materials can be concentrated rapidly to high solids content. Operating continuously and automatically under vacuum or gas pressure, it can also carry out chemical reactions, steam stripping, degassing, etc. A cylindrical, horizontally-mounted jacketed chamber containing a rotor, Ajust-O-Film is built in sizes to handle throughputs

ranging from 100 to 5,000 lb. per hr. The machine can be fabricated of steel or a choice of corrosion-resistent materials such as stainless steel, Monel, Inconel.—*Kontro Co., Petersham, Mass.*

Homogenizer

Disperses emulsions with ultrasonic waves. (184I)

. . . Rapisonic homogenizer produces ultrafine dispersions with outstanding stability. Use of emulsifying agents is reduced or eliminated completely. By using ultrasonic waves, Rapisonic unit can homogenize from 300 to 420 gal. per hr. with low power consumption. It works well on wax emulsions, dyes, insecticides, resins, detergents, etc.—*J. H. Day Co., Inc., Cincinnati, Ohio.*

Mill, Ball

Operates like ferris wheel, grinds faster. (185A)

. . . Hyswing mill consists of four ball mills mounted 90 deg. apart on trunnions attached to a cylindrical frame. Each mill has sprocket connected—by a chain—to a separate sprocket on the frame's stationary central shaft. As the frame rotates about its shaft, four chains walk around the stationary sprockets—causing changes in relative positions of frame, mills and grinding bodies. Due to centrifugal force, balls slide in close contact with each other and with mill wall at all times. Mill comes in 2 sizes: B-1 (4 containers, 5-liter internal volume) and C-1 (4 containers, 50-liter internal volume).—*Wiwoco Corp., New York 5, N. Y.*

Nozzle, Centrifugal

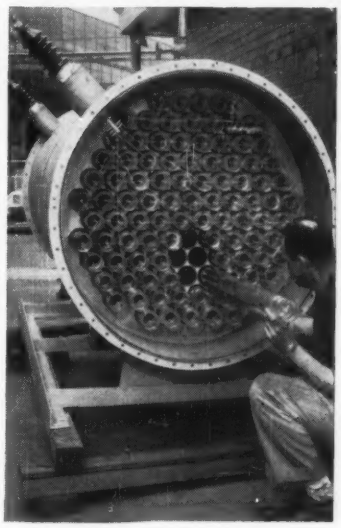
Improves performance of separator. (185B)

. . . Nozzle design on Merco centrifugal separators improves slurry discharge flow and cuts replacement time. Nozzle has flow passages that improve flow efficiency. It is recessed in the rotor bowl to allow free discharge of the jet at a fixed angle.—*Merco Centrifugal Co., San Francisco 11, Calif.*

Ozonator

Generates ozone on tonnage basis. (185C)

. . . Ozone for oxidation can be produced commercially with outputs ranging from 0.1 to 10,000 lb. or more per day. Model G-204 ozonator, using air feed produces 60 lb. of ozone per day, or 120 lb. per day using oxygen feed. Multiples of this unit are operating in tonnage ozone plants now. Air discharges from the ozonator containing approximately 1% by weight ozone. With oxygen feed, ozone concentration is doubled. Ozonator has no moving parts. Units will operate continuously with life expectancy of at least 25 years. Only yearly cleaning is required. Ozonators are safeguarded completely to confine ozone and eliminate electrical hazards. Grounded metal enclosures surround high voltage parts. Access openings are interlocked to prohibit entrance without prior isolation of electrical circuits. To operate an ozonator, source of dry air or oxygen is needed. For plants using air, an air filter, compressor, cooler and dryer are required. For plants operating on oxygen, a blower, cooler and dessicant dryer are required.—*Welsbach Corp., Philadelphia 2, Pa.*



Press, Tablet

Produces more. (185D)

. . . Tablet press produces far more than any comparable machine, has low first cost and tool cost. This single rotary press produces at rate of 1,150 tablets per min.—*Arthur Colton Co., Detroit 7, Mich.*

Pulverizer

Removes foreign particles ahead of active zone. (185E)

. . . Jet pulverizer's throughput rate has been boosted by incorporating a rock-stripper zone. Immediately after material enters unit, foreign particles of different specific gravity than feed are stripped out. Majac Jet works on principle of attrition between particles. It can be used on a wide range of materials including iron ores, clay, graphite, feldspar.—*Majac, Inc., Sharpsburg, Pa.*

Purifiers, Gas

For ammonia synthesis gas production. (185F)

. . . Through an exclusive agreement with Dutch State Mines, manufacturer now offers equipment needed for purification of coke-oven gas before synthesis of ammonia. Design and manufacture of equipment for low-temperature separation of coke-oven gas will be based entirely on American chemical engineering practice. Purifying equipment will incorporate all process design and operating experience developed by Dutch State Mines during the 25 years that they've been in business.—*Air Products, Inc., Allentown, Pa.*

Sampler, Pipe Line

Takes representative composite. (185G)

. . . An automatic pipe-line sampler takes minute samples at close intervals (up to 300 per min.) to produce composite samples representative of constituent flow. A low-capacity piston pump operated magnetically and controlled by a simple electronic circuit, it can deliver ¼ to 4½ gal. in 24 hr.—*Gilbert & Barker Mfg. Co., West Springfield, Mass.*

Scrubber

Small. (185H)

. . . Model A Scrubjet, for spot use in chemical processing, prevents discharge of acid (hydrochloric, phosphoric, hydrobromic) fumes to atmosphere by spray-injection of water.—*Saran Lined Pipe Co., Detroit 20, Mich.*

PROCESS EQUIPMENT, continued

Separator, Particle

For close size separations. (186A)

. . . Air Screen offers clean-cut separations for classification of fine sieve and sub-sieve sizes. It's particularly effective removing small quantities of fine particles from coarse material. Unit can be operated either continuously or batchwise, as either suction or pressure system. Granular material feeds by gravity to a low point in the center of the equipment where a suction nozzle picks it up. Expanding air stream carries feed upward along deflectors and past material-diverting passages. Flow is controlled to permit particles larger than the desired cut to settle out. Particles smaller than the cut are carried out with the air stream. The size of Air Screen required to sift a given material is largely determined by the amount of fines required to pass through the screen. The total rate at which unscreened material is handled does affect the size, but not to any significant degree.—*Airborne Conveyors Corp., New York 13, N. Y.*

Softener, Water

Designed for individual requirements. (186B)

. . . Line of zeolite industrial water softeners offers individual design to meet particular size and capacity needs. There's a choice of controls for either manual or automatic operation. Standard equipment has multiport, single control valve.—*Industrial Filter & Pump Mfg. Co., Chicago 50, Ill.*

Vessels, Polyethylene

Withstand high temperature. (186C)

. . . Polyethylene process vessels are now being built to withstand temperatures up to 350 F. without softening or distortion of the structure. At present size is limited to 30 gal. or less but larger structures will be built in the future. In addition to improved heat resistance, vessels have higher tensile strength and elongation at room temperature. They are not subject to stress cracking.—*American Agile Corp., Maple Heights, Ohio.*

• Pumps, Blowers and Compressors

Circulator, Gas

For NH_3 synthesis, is multi-stage, rotary type. (186D)

. . . Maulwurf pump, a German-built rotary unit, cuts oil contamination and lengthens catalyst life in high-pressure ammonia synthesis. Pump is built with both pump and drive motor enclosed within a pressure-proof housing at full system pressure. With gas-stream pressure in range of 2,850-4,250 psi., unit boosts pressure 210-355 psi.—*Foram Corp., New York 5, N. Y.*

Compressor, Rotary

Achieves high output by using two compression chambers. (186E)

. . . Rotary compressor is ½ to ¾ smaller and ¼ cheaper than conventional units with comparable output. Unit doesn't require oil lubrication, is expected to have particular value where product contamination must be avoided. Low cost is due to small size and few parts. Minimum of moving parts reduces wear and maintenance. Unit develops high output at relatively low rotational speed because it is a double-acting compressing unit operating off a single concentrically-mounted shaft within one housing. Both sides are served by the same rotor with the same reciprocating blades producing both suction and compression. Current model has a capacity of 120 cfm. and a discharge pressure of 120 psi. Rotor diameter is 4 in., inside bore 6 in. Other models are being designed with bore diameters from 6 to 18 in. for outputs from 30 to 350 cfm. These will be produced as the demand arises.—*Petersen Enterprises, San Francisco 15, Calif.*

Compressor, Vertical

Cuts extreme pressure cost in chemical synthesis. (186F)

. . . Adoption of vertical design in preference to conventional horizontal type compressor resolves problems in high-pressure chemical syntheses. And switchover has proved so sound that this type unit now is preferred also for medium pressures. Aside from mechanical advantages, vertical unit offers savings in initial cost, operating and maintenance expenses. Unit is controlled from a panel on obstruction-free platform. All instruments, safety valves, bypasses, blowdowns, etc., are located there. Design of unit permits maximum rigidity.—*F. C. Versteegh, San Francisco 2, Calif.*

Exhauster, Power

Has axial-air-gap motor, will handle hazardous fumes. (186G)

. . . Model B power exhauster handles hazardous fumes without need for explosion-proof motor in most cases. Designed around an axial-air-gap motor, unit employs cooling air from motor to prevent collection of fumes within. Weather-proof outlet of Air-Van prevents blowback even under most extreme weather conditions. Backdraft dampers aren't necessary. Unit capacities run up to 12,000 cfm. and 5 hp. —*Gallaher Co., Omaha, Neb.*

B&W
TUBING, PIPE, WELDING FITTINGS

For *every pressure application*

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WHATEVER YOUR SPECIFIC REQUIREMENTS

● **Pressure** ● **Temperature** ● **Corrosion Resistance** ● **Oxidation Resistance**

You'll find the right B&W *tubular products for the job*

CHOOSE FROM A COMPLETE RANGE

B&W TUBING AND PIPE
Seamless and Welded

TYPES—Seamless tubes—hot-finished, cold-finished Welded tubes—from hot-rolled or cold-rolled strip

GRADES—Carbon, alloy and stainless steels

SIZES—Up to 9⅝ inches outside diameter in wide range of wall thicknesses

SURFACE FINISHES—As rolled, as drawn, as welded, flash removed, turned, scale-free and polished

SHAPES—Round, square, rectangular, or special shapes

SPECIFICATIONS—Made to any of the standard specifications such as those of the ASTM and ASME

B&W
SEAMLESS WELDING FITTINGS

TYPES—Elbows, Tees, Caps, Saddles, Laterals, Nipples, Returns, Flanges, Stub Ends, Reducers, Crosses, Bull Plugs

GRADES—Carbon, alloy and stainless steels

SIZES—Complete range of sizes and schedules

FEATURES—Precision-cut bevel ends, uniform wall thickness, true dimensional accuracy, smooth inner surface, full radius, controlled grain structure

SPECIFICATIONS—Made to ASTM specifications for carbon and ferritic alloy steels, and ASA and MSS specifications for stainless grades

THE BABCOCK & WILCOX COMPANY
TUBULAR PRODUCTS DIVISION
General Offices: **Beaver Falls, Pennsylvania**
Plants: **Beaver Falls, Pa.; Alliance, Ohio; Milwaukee, Wis.**
Seamless and Welded Tubing and Pipe, Seamless Welding Fittings and Flanges—in Carbon, Alloy and Stainless Steels

TA-5062(P)

PUMPS, BLOWERS & COMPRESSORS, continued

Fans, Exhaust

Light weight, corrosion resistant. (188A)

. . . All-metal Durco B series of exhaust fans resist corrosive fumes and gases. Fans are more efficient, 40% lighter, less expensive than previous units. Capacities to 8,000 cfm.—*Duriron Co., Inc., Dayton 1, Ohio.*

Fans, Industrial

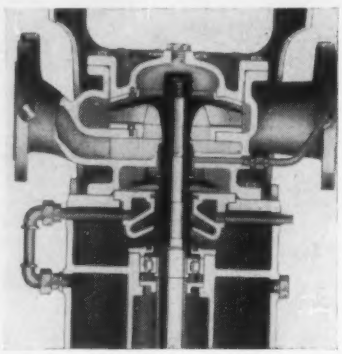
For maximum serviceability. (188B)

. . . Line of industrial fans is designed for fumes, materials handling or high-temperature gases under corrosive and abrasive conditions. Line incorporates efficient designs, proportions conforming to latest NAFM standards and increased range of 14 standard sizes.—*Bayley Blower Co., Milwaukee 4, Wis.*

Pump, Centrifugal

For abrasive and corrosive liquids. (188C)

. . . Nobox, Swedish centrifugal pump, is sealed, while running by a hydrodynamically balanced liquid ring. Close running clearances are eliminated along with resultant wear on sealing surfaces. During shutdown, system pressure is sealed within pump by patented diaphragm seal that only contacts shaft while it's stationary. Either system liquid or separate liquid is used for sealing. Only losses are through evaporation. Swedish pulp industry uses a large number of Nobox pumps to handle sulfate and sulfite liquors.—*Jonkopings Mekaniska Werkstads Aktiebolag, Jonkoping, Sweden.*



Pump, Centrifugal

Trouble-free, low-cost unit handles slurries. (188D)

. . . Among the many things that Wemco Torque-Flow solids pump can do are: pumping foods with little or no danger, moving abrasive ore slurries, handling trash-loaded raw sewage sludge. Impeller is fully recessed in the pump casing so that it's entirely outside the path of flow from inlet to discharge. Flow through impeller vanes such as experienced with conventional centrifugal pumps is eliminated. Thus solids suspended in the fluid aren't battered by rapidly revolving impeller vanes; there's little, if any, solids degradation. Pumps are available from 2-10 in. for flows to 3,900 gpm. at 80 ft. ahead.—*Western Machinery Co., San Francisco 7, Calif.*

Pump, Chemical

Designed for long life, easy maintenance. (188E)

. . . Line of pumps is engineered specifically to handle acids and corrosive chemicals. Complete pump rotating element, bracket and stuffing box assembly can be removed as a unit without disturbing the piping. All parts are interchangeable, with the exception of the pump case and impeller. Corrosion-resistant catch basin is integral part of pump case. Bearings have triple protection and synthetic rubber snap-on gland cover guards against acid spray.—*Pump Div., Byron Jackson Co., Los Angeles 54, Calif.*

Pump, Graphite

Assures leak-proof operation. (188F)

. . . Redesigned line of Impervite centrifugal pumps has leak-proof seal. Impervious graphite units are suitable for intermittent or continuous handling of corrosives. Other design changes include use of over-size bearings and heavy, stainless steel shaft. Shaft and impeller are made as two independent components to permit simplified maintenance. Pump capacities range from 25 to 200 gpm.—*Falls Industries, Inc., Solon, Ohio.*

Pump, High-Head

Won't leak at heads up to 150 ft. (188G)

. . . Standard model CFH in line of Chempump canned-rotor pumps is a 1½-hp. unit guaranteed to pump up to 53 gpm. at 150 ft. head without leaking. Unit handles corrosive, explosive and other difficult fluids at temperatures to 450 F. and pressures to 300 psi. Seal-less centrifugals have pump and motor combined in single unit. Fluid handled circulates through rotor chamber of motor to cool it and lubricate bearings. Pumps come in cast iron, 316 stainless, Monel, Carpenter-20.—*Chempump Corp., Philadelphia 18, Pa.*

Pump, Liquid Metals

Moves liquid metals within cooling or heating systems. (188H)

. . . Conduction-type a.c. EM pump has no moving parts or packing glands. Liquid metal, being electrical conductor, can be pumped by applying principles of electromagnetism. Any liquid metal can be moved that will wet the pumping section and that has high conductivity. Direction of flow can be reversed by reversing direction of magnetic field with respect to direction of current through pumping section.—*Callery Chemical Co., Callery, Pa.*

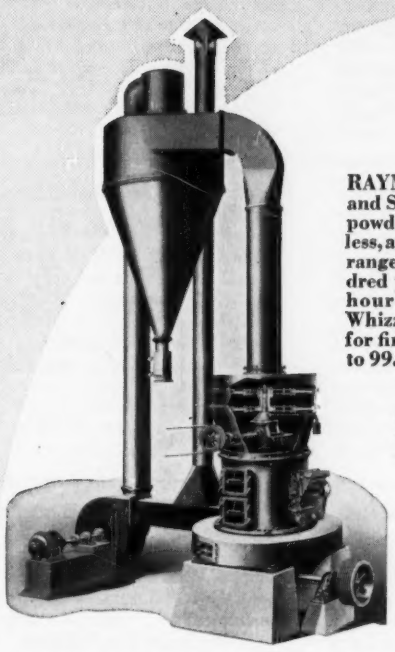
Raymond

PULVERIZING • AIR SEPARATING • FLASH DRYING EQUIPMENT

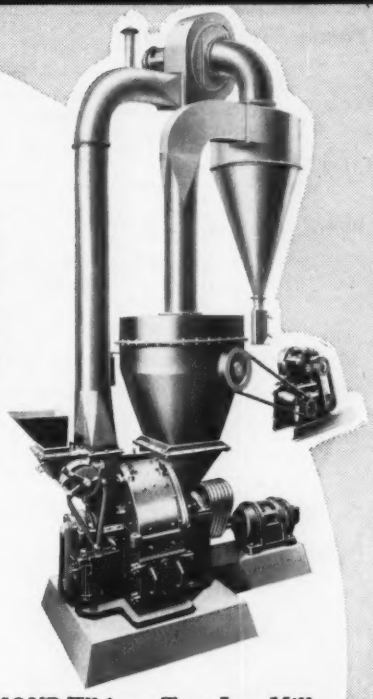
SINCE 1887

RAYMOND builds a full line of Mills and Separators for the production of powdered materials by clean, dustless, automatic operation. These units range in capacity from a few hundred pounds to 30 tons or more per hour. Products are classified by Whizzer Separation, easily adjustable for finenesses from 50 mesh material to 99.9% or better passing 325 mesh.

Write for further details telling us your problem.



RAYMOND High Side Roller Mill
Equipped with Whizzer Separator for finish grinding operations in handling medium and large capacities.



RAYMOND Whizzer Type Imp Mill
Hammer type pulverizer with integral classifier to insure finger tip control of product fineness. Also often furnished with Flash Drying Accessories.

RAYMOND Cage Mill
With Flash Drying System for disintegrating soft materials and removing moisture for delivery of a fine, dry, free-flowing product.

RAYMOND Mechanical Air Separator with Double Whizzer for classifying finely ground material from mills, screens or bins.

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Raymond Division

Combustion Engineering-Superheater, Ltd., Montreal, Canada

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PUMPS, BLOWERS & COMPRESSORS, continued

Pump, Positive Rotary

Costs less, is more efficient and economical. (190A)

. . . Rotary pump provides positive-displacement pumping at one-half the cost of comparable pumps. Operating over wide viscosity range and handling slurries up to 78% solids, pump won't aerate liquids or break semi-solids. Liquid is moved by the action of meshing rubber-lobed impeller which, when necessary, can be replaced easily. There are no valves or pistons. Available sizes permit handling flows up to 2,200 gpm. at pressures to 1,000 psi. Pumps are self-priming.—*Lindquist Pump Corp., Culver City 12, Calif.*

Pump, Process

Keeps seal at high temperature. (190B)

. . . Using standard, single, mechanical seals, redesigned line of process pumps handles liquids up to 750 F. for long periods—without shutdown. Cooling jacket around stuffing box does trick of keeping seal cool. Jacket reduces stuffing box temperature without undue cooling of process liquids in body of pump. Pump can operate 3 to 4 months with unattended continuous performance. Seal used is readily available standard type, interchangeable with conventional packing. Cooling jacket position is localized about the stuffing box. Circulation of high-temperature liquid from casing to stuffing box is held to a minimum. Liquid in the box is cooled well below the temperature limits of the seal at all times. Stuffing box depth is such that shaft cooling prevents damage to the mechanical seal and Teflon packing. Cooling water for the pump can be taken from the plant supply.—*Dean Brothers Pumps Inc., Indianapolis 7, Ind.*

Pump, Proportioning

Is packless, positive-displacement, fully-enclosed unit. (190C)

. . . "Meter that pumps" is Hills-McCanna-Meter, proportioning pump that meters precisely from 5 cc. to 6 gph. It delivers a pulse-free flow, is easily adjustable by light finger pressure while pump is operating or stationary. Pumping element is sealed and absolutely leak-proof. There are no stuffing boxes or packing glands. Although completely enclosed, the unit is easily serviced. It can be controlled automatically utilizing instrument air signal.—*Pump Div., Hills-McCanna Co., Chicago 18, Ill.*

Pump, Proportioning

Fitted with plastic ends to resist corrosion. (190D)

. . . Type U proportioning pump handles corrosive materials such as ferric chloride, sodium hypochlorite, cupric chloride and hydrochloric, hydrofluoric and nitric acids. Pump body and check valve assemblies are made from either unplasticized polyvinyl chloride or Kel-F. Pump plungers and check-valve balls are made of ceramic. Plastic parts are completely interchangeable with metallic liquid ends; existing metal U pumps can be converted to plastic construction. Type U pumps can deliver up to 19 gallons per hour, per feed. They are built in varying feed units—one, two, three, four.—*Pump Div., Hills-McCanna Co., Chicago 18, Ill.*

Pump, Stainless

Has Teflon-ceramic seal. (190E)

. . . Adoption of Teflon-ceramic seal has broadened the application of the Eco pump on corrosive liquids and slurries. Diatomaceous earth slurry has been handled for more than 20 weeks without damaging seal, although much of the impeller was worn away. New gland is dimensionally identical and interchangeable with stellite-graphitized carbon seal used on standard model pump. Seal should be operated below 160 F. Higher temperatures can be tolerated on intermittent service.—*Eco Engineering Co., Newark 1, N. J.*

Pump, Turbine

Has new impeller design. (190F)

. . . Vertical turbine pump incorporates radically new impeller design that produces higher head and efficiency with extremely low net positive suction head (NPSH). Pump is built in 10, 12, and 14 in. sizes for 400 to 2,100 gpm.—*Hydraulic Products, A. O. Smith Corp., Los Angeles 22, Calif.*

Pump, Turbo

For high pressure service, long life. (190G)

. . . Turbo-driven centrifugal pump is built for service on boiler, evaporator, open-heater feeds; oil refinery charging, etc. Design insures against corrosion-erosion of the housing even with the highest developed pressures per stage. Pumps deliver up to 800 gpm. at discharge pressures to 1,000 psig. and liquid temperatures to 325 F. Turbine is rated for steam pressure to 850 psig. and 805 F.—*J. S. Coffin, Jr., Co., Englewood, N. J.*

Pump, Two-Stage

Operates efficiently on clear liquids. (190H)

. . . Labyrinth diaphragm is used on series of two-stage pumps to give thrust balance; opposed impellers assure hydraulic balance. Bearing spans are short, resulting in savings on space up to 50% compared with equivalent pumps. Casings are split horizontally. Wide interchangeability of parts keeps spare parts inventories at a minimum.—*Goulds Pumps, Inc., Seneca Falls, N. Y.*

Pump, Vibratory

Handles slurries. (191A)

. . . Operating on a vibratory principle, Vibro-Pump handles slurries of beans, elbow macaroni, sand and rivets. It can also pump mud and liquids with up to 20% vapor.—*H. & H. Mfg. Co., Clifton Heights, Pa.*

Pumps, Canned Motor

Have zero leakage over wide range of pressure and temperature. (191B)

. . . Designed originally to circulate water between nuclear reactor and steam generator, this line of hermetically sealed motor pumps is now available for other industrial uses. Units will handle radioactive water with zero leakage at rates from 5 to 17,000 gpm. They can pump water and other fluids at system pressures up to 2,500 psi. and temperatures as high as 650 F. —*Westinghouse Electric Corp., Pittsburgh 30, Pa.*

Pumps, Centrifugal

Stock units with custom-built features. (191C)

. . . Features of new line of stock centrifugal pumps include: stocking in aluminum bronze or nickel chrome; wide interchangeability of parts; 5 sizes to 140 ft., 600 gpm.; erosion and corrosion resistance. This is the first time such pumps are competitively priced. Other features—resistance to cavitation-pitting and multi-seal bearing protection—offer maximum standardization and flexibility.—*Ampco Metal, Inc., Milwaukee 46, Wis.*

Pumps, Gear

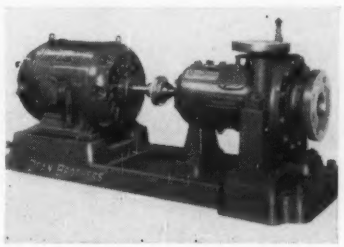
Fitted with mechanical seals. (191D)

. . . Both rotor-bearing-sleeve type Viking pump for normal duty and Viking pump for heavy duty are built with mechanical seals. Seals are claimed to give leakless operation eliminating need for packing. At same time carbon graphite bushings have replaced bronze bushings. Bearings are lubricated by liquid being pumped.—*Viking Pump Co., Cedar Falls, Iowa.*

Pumps, Process

Have standardized special features. (191E)

. . . Features of centrifugal pump design normally considered as special have been standardized in R-10 series of pumps. Included are components such as enclosed cradle; drain rim base; labyrinth, nonsparking bearing seals, alloy steel studs. One standard cradle assembly serves all pump sizes in the series. Every pump in the line is available in any of five standard material classifications.—*Dean Brothers Pumps, Inc., Indianapolis 7, Ind.*



Pumps, Process

Handle most severe pumping duty. (191F)

. . . Series H line of heavy-duty chemical process pumps features simple, sturdy and versatile construction. Line is built for high heads, low capacities, routine transfer services. Large shaft and heavy bearings allow only minimum shaft deflection. Suction and discharge are integral with casing. Pumps are available in standard Durco corrosion-resisting alloys and in stainless and other materials.—*Duriron Co., Inc., Dayton 1, Ohio.*

About This Equipment Inventory . . .

CE's second annual inventory of new equipment and accessories lists only new or newsworthy items that have been selected by CE editors for publication in August 1954—July 1955 issues. The 366 items in this inventory have, therefore, been carefully screened for their interest and value to chemical engineers in the chemical process industries. Emphasis is chiefly on equipment that can be used in commercial or large-scale processing and production units.

PUMPS, BLOWERS & COMPRESSORS, continued

Pumps, Turbine

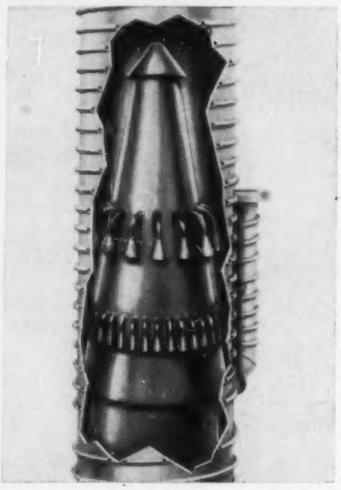
For water wells. (192A)

. . . Submersible turbine pumps are available for delivering well water at 600-7,000 gph. Units are corrosion resistant. Pumps never need priming, are water-cooled and water-lubricated. —*Deming Co., Salem, Ohio.*

Pumps, Vacuum

Have 10-100% more capacity than similar pumps. (192B)

. . . Ring-Jet pumps—diffusion and booster—handle greater capacity over critical ranges and exhaust to substantially higher forepressures. Conventional jet cone has been replaced with ring of jets, allowing cross sectional area of air-flow path to be increased without increasing the distance from the beginning of each jet stream to the nearest condensing surface. There's no increase of volume of oil vaporized. Therefore no additional heat input is needed. Boiler pressure is lower, reducing oil oxidation and lengthening oil life. Forepressure tolerance of new pumps is substantially higher than that of conventional designs. Ring-Jet diffusion pumps are available in 4, 6, 10, 14 and 16-in. sizes. Ring-Jet booster pumps are available in 4, 6, 10 and 16-in. sizes.—*F. J. Stokes Machine Co., Philadelphia 20, Pa.*



Separator, Air-Water

Applied to exhaust of water-sealed vacuum pumps, stops noise. (192C)

. . . Double-acting WSS water-separator snubber strips water from water-sealed vacuum pumps, muffles noise. Both water and air enter the side of the snubber and are separated centrifugally within the unit. Water-free air then discharges at the top and water leaves at the bottom. Unit can be cleaned conveniently, when necessary.—*Burgess-Manning Co., Libertyville, Ill.*

Siphons, Jet

Plastic, for handling waste acid. (192D)

. . . Jet siphons made of Furacam plastic reinforced with fibrous glass are used for emptying waste acid from tanks and pumps. Plastic isn't attacked by acid or alkali—with the exception of strong chromic or nitrid acids. Nozzles are sized for standard acid hose, unit is easily disassembled for cleaning. Jets can operate with steam from 10 to 50 psi. Capacities: 1,200 and 4,000 gph. on 20-psi. steam.—*Carl Buck & Associates, Essex Fells, N. J.*

• Safety Equipment

Blanket, Fire

In quick-release wall canister. (192E)

. . . Blanket for emergency fire extinguishing or first aid is located in wall canister. Mounted in conspicuous location and painted firehouse red, canister is ready for immediate use. Canister lid opens fully to permit blanket to fall free instantly. In closed position, lid is held in place by a spring steel clip.—*Industrial Products Co., Philadelphia, Pa.*

Covers, Shoe

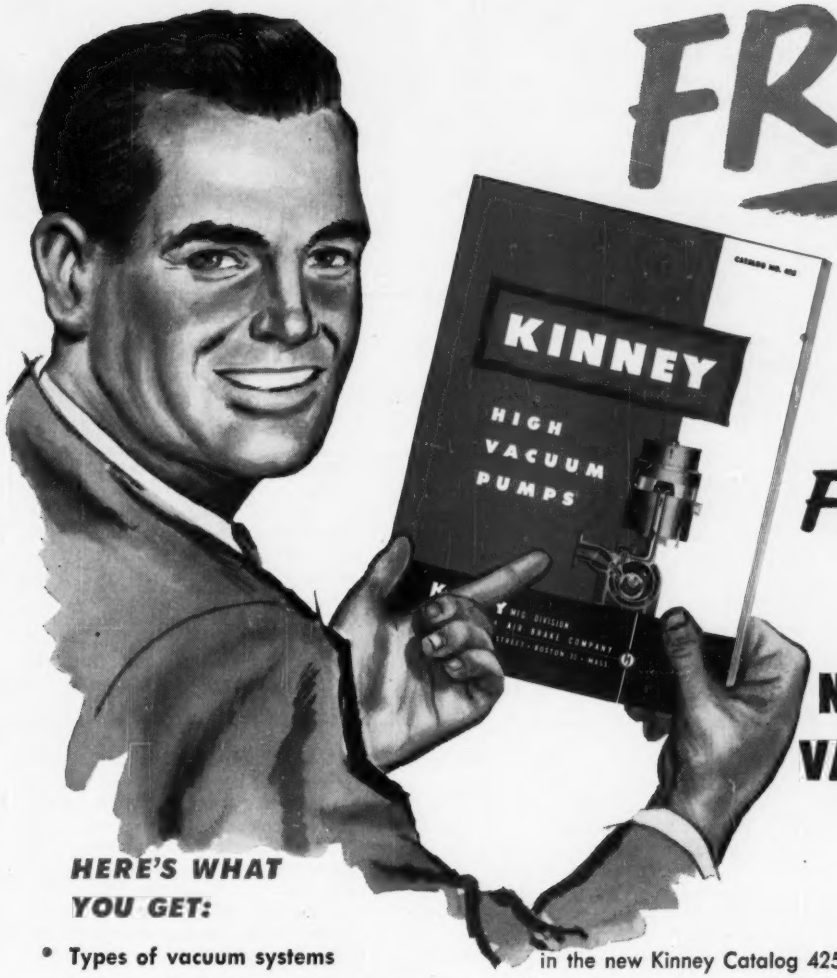
Prevent spread of radioactive contamination. (192F)

. . . Vinyl-coated canvas shoe covers, worn over ordinary shoes, minimize spread of contamination—particularly radioactive. Covers themselves do not protect against radiation, but are worn in contaminated areas, then removed to avoid tracking contamination into other areas. Vinyl coating over canvas makes a tough, flexible, abrasion-resistant surface for the soles of the canvas shoe covers.—*Flexible Products Co., Marietta, Ga.*

Covers, Valve

Protect workers against leakage. (192G)

. . . ChemKovers, Dynel covers for valves and flanges, are superior to heavy metal covers both in initial cost and upkeep. Acid- and caustic-resistant covers are easier to install and store. Covers conform with contour of valve connections. Repair work is easier; covers can be unwrapped from installation, laundered and reused. They are sufficiently strong to contain sprays from failure of gasket or packing on pressurized lines yet they permit complete operating freedom of covered valves. ChemKovers are available in a wide variety of sizes at prices which range from 70¢ to $5.—*Mines Safety Appliances Co., Pittsburgh 8, Pa.*



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- Types of vacuum systems
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- Engineering section, including formulae for vacuum pump selection
- Methods of handling water-vapor problems—gas ballasting, etc.
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More than ever, engineers and companies are looking to Kinney for the solution to modern vacuum problems. Whether your vacuum requirements are in the laboratory or on the production line, the highly specialized vacuum experience at Kinney is at your service.

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SAFETY EQUIPMENT, continued

Goggle, Chemical

Protects against splashing liquid, dusty air. (194A)

. . . No. 100 chemical goggle, perfectly contoured and molded from soft, flexible synthetic rubber, fits snugly and comfortably, protects eyes completely. It's large enough to be worn over most eyeglasses. Baffled ventilator holes on each side allow air to circulate and prevent fogging. Window can be removed from soft rubber frame and replaced within seconds, if necessary. The worker has full vision through the wide, transparent, plastic window. Flat elastic headband is easy to adjust and holds the goggles securely in place.—*Chicago Eye Shield Co., Chicago, Ill.*

Guard, Hand Truck

Protects against injury when truck slips. (194B)

. . . Swinguard device, attached by heavy-duty clamps to back of hand truck, protects operator if trucks slips. If truck drops back toward operator, Swinguard touches floor. Weight of load thrusting through guard against floor pushes truck away from operator's legs. Attachment also acts as skid on forward motion.—*Twin-Tilt Truck Co., Cincinnati, Ohio.*

Hood, Fire

Has built-in safety helmet. (194C)

. . . Protection against falling objects has been added to standard protective features in the Issco fire hood. Fully adjustable hard safety hat, riveted into top of hood, gives this protection. Hood, weighing less than 4 lb., is of aluminized asbestos for greater heat deflection; is fireproof throughout. Riveted-in-place aluminum frame holds ¼-in. laminated safety glass window. This window, measuring 5 in. by 6¾ in., affords a full unobstructed view. Hood can be put on in seconds and affords that extra measure of protection that often makes the difference in saving a life or valuable property. It should find use in municipal, industrial, sea and air fire forces.—*Industrial Safety Specialties Co., Perkasie, Pa.*

Hood, Protective

Protects against radiant heat. (194D)

. . . Lightweight protective hood protects fire fighters from radiant heat temperatures as high as 2,500 F. It's made of Fyre-Armor, recently developed heat and flame resistant fabric of various metallic layers with an outside coating of aluminum foil. Hood has eyeglasses highly resistant to heat and complete freedom of movement. It covers the head, chest, shoulders and back; is constructed to be worn over a standard skull guard and is spacious enough to permit the wearing of standard breathing equipment or a smoke mask. Fyre-Armor heating flame-resistant fabric is also available in firefighting suits, rescue blankets, industrial aprons, mittens, leggings and boots.—*Far-Ex Corp., New York, N. Y.*

Oxygen, Emergency

In portable and compact unit. (194E)

. . . In an emergency, lightweight Pocketair oxygen unit can be transported easily to the point of need. It can be used by untrained persons as well as those trained to give normal manual respiration. Complete unit, weighing 17 lb., includes two lightweight standard "B" medical oxygen cylinders, a flow regulator with gage for flow rates of disposable masks. Pocketair has already proved itself valuable by saving lives of victims of smoke, drug and gas poisoning, burns, heart attacks, shocks from all causes and heat exhaustion. Unit costs $89.50.—*Cycle-Flo Co., Milford, Conn.*

Pump, Portable Fire

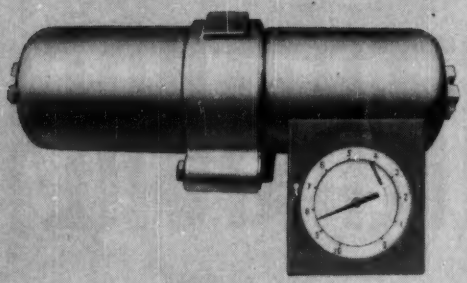
Equals pumping rate of heavy trailer-mounted units. (194F)

. . . 60 hp. gas turbine coupled to 500 gpm. centrifugal pump provides compact, light-weight fire fighter with punch of heavy weight. From cold start, Sigmund Rover pump can be operating within 15 sec.; primes at minimum of 1 ft. per sec. up to 24 ft. lift. Turbine and pump are close coupled, mounted within tubular steel frame fitted with carrying handles. Total weight is 215 lb. Turbine will run on gasoline, diesel or any other distillate fuel. Pump rotates at 4,500 rpm. The suction branch has a 4-in. bore while discharge is through two 2½-in. outlets. Sigmund Rover pump can be supplied mounted on a four-wheeled drive jeep, providing a powerful portable pumping unit capable of travelling over the roughest country to the most isolated sites where the pump is required to operate.—*Sigmund Pumps, Ltd., Gateshead 11, England.*

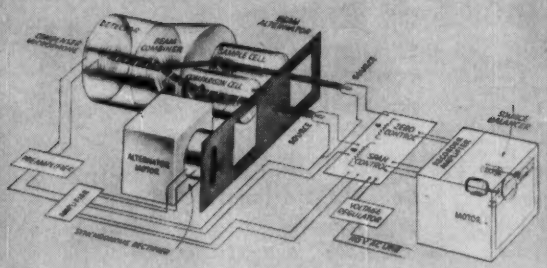
Suit, Plastic

Protects atomic workers. (194G)

. . . Air-inflated plastic suit protects wearer from contact with radioactive dust and particles. Suit is now in use in Britain's energy research centers and plants producing materials for nuclear energy.



Analyzer unit in explosion-proof case with Recorder for remote mounting



Schematic diagram showing operation principle of M-S-A Infrared Analyzer

Panel mounted Analyzer Unit

Large alcohol manufacturer reports—

M-S-A INFRARED ANALYZER

"squeezes" costly water contaminants out of production

Batch sampling of alcohol production for water contaminants was definitely not the economical answer for this manufacturer. Too much time elapsed between the sampling and the lab results . . . often thousands of gallons would be produced before the analysis showing the product to be unsatisfactory was reported. That meant the batch was either sold as low quality alcohol at a loss in profit, or recycled at increase in costs.

The company solved the problem with an M-S-A Infrared Analyzer installation. This unit, calibrated to measure water in alcohol *continuously*, gives instantaneous warnings of any increase in water contaminants in the process. Immediate corrective measures prevent low quality production, maintain a high degree of efficiency. The company estimates that thousands of dollars have been saved since the M-S-A Infrared Analyzer has been on the job.

This is only one example of how this device can save money, increase production economies. It is being used successfully in all phases of gas and liquid analysis in process control applications. If you have a special problem, we will be happy to show you how this instrument can be designed to fit your needs.

MSA

SAFETY EQUIPMENT HEADQUARTERS

Call the M-S-A man on your every safety problem . . . his job is to help you

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Inquiry Code Number for this advertisement—195

free TECHNICAL LITERATURE

1. STANDARD PRACTICE SP-42 . . . Eight page folder listing detailed specifications for 150# corrosion resistant cast flanged valves, flanges and flanged fittings.

2. FLOW DIAGRAMS . . . Four page folder describing basic stainless steel valve designs in terms of fluid flow. Uses and limitations of each major type are discussed.

3. MATERIALS SELECTION CHART . . . Four page chart designed to assist in the selection of the most economical alloy for a given corrosive problem. More than 350 specific corrosives are included.

4. ALLOY REFERENCE CHART . . . Six page pamphlet listing alloy designations, applications, properties and analysis of corrosion and heat resisting alloys.

5. HOW TO GET THE RIGHT VALVE . . . Eight page folder giving information needed to enable manufacturer, supply company or sales representative to fit the proper valve for the application. Tells user or buyer how to get what he needs when ordering a valve.

6. THREADING STAINLESS STEEL . . . Four page folder describing specific high production machining operations on stainless steel valve parts. Speeds, cutting angles, coolants and tooling are discussed.

7. QUIKUPL STAINLESS STEEL FITTING . . . Technical manual describing design, applications and limitations of revolutionary new type stainless fittings.

8. CATALOG 55D (VALVES) . . . Sixty-eight page simplified stainless steel valve catalog includes engineering drawings, weights, size ranges, dimensions and basic material data.

9. CATALOG 55F (FITTINGS) . . . Complete stainless steel fitting catalog giving engineering drawings, dimensions and basic material data.

10. DESIGN FACTORS OF STAINLESS STEEL VALVES . . . Four page technical folder explaining basic design factors which a good stainless steel gate or globe valve should incorporate.

11. VALVE TECHNICAL DATA . . . Twelve page technical manual giving design, selection, maintenance and repair data for stainless steel valves.

12. FIGURE NUMBER CROSS REFERENCE CHART . . . Four page folder showing equivalent figure numbers of the five leading stainless steel valve producers.

13. GETTING THE MOST OUT OF YOUR VALVES . . . Four page technical discussion explaining selection, installation, inspection and maintenance of stainless steel valves.

14. PLASTIC PUMPS . . . Four page folder describing the Vanton "Flex-i-Liner" pump. Full and cut-away views, plus performance charts and material selection hints are included.

15. BUNA N AND HARD RUBBER PRODUCTS . . . Four page folder describing the Vanton line of Buna N and natural hard rubber pumps, valves, pipe and fittings. Tables, charts and other technical data required for proper selection.

16. STAINLESS STEEL VALVES AND FITTINGS IN THE PAPER INDUSTRY . . . Eight page technical article covering alloys, valve selection, design factors, installation, maintenance, operation and inspection of stainless steel valves and fittings used by the paper industry.

17. VALVES TO COMBAT CORROSION . . . *75* questions and answers selected from Cooper Alloy valve clinics covering materials, operations, service problems, installation and repair.

18. NEWSCAST . . . An eight page bi-monthly publication devoted to reporting technical material of value to those interested in corrosion resistant castings, fittings, valves and pumps.

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LEADING PRODUCERS OF **STAINLESS STEEL** VALVES FITTINGS AND CASTINGS

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1955 INVENTORY

NEW...

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This Section ▶

2,621 BULLETINS . . . new and current literature you can get from manufacturers . . . the most extensive listing of its kind . . . organized into groups for fast reference . . . easy to get through Reader Service.

THIS is CE's second annual inventory of technical literature now available from manufacturers. It lists nearly 900 bulletins on chemicals and materials and some 1,800 on equipment and accessories. It is made up of all items published in CE's monthly Guide to Technical Literature in the issues of August 1954—July 1955 as well as the literature mentioned in all ads in this Inventory Issue. For a copy of any item, write its code number on one of the Reader Service postcards, then mail to us.

1955 INVENTORY

New Technical Literature

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Chemicals

Absorbers, Ultraviolet.....U.V. Absorber 9 (2-hydroxy-4-methoxy-benzophenone) is unusually effective. It absorbs harmful U.V. & converts it into harmless heat without fluorescence. New Product Bulletin 31.
198A American Cyanamid Co.

Acetaldehyde.....A clear, volatile liquid, is one of the most important organic chemicals, having a production rate that is exceeded by few other aliphatics. Properties, specifications, etc. Bulletin S-06-2A.
198B Celanese Corp. of America.

Acetaldehyde.....Eastman acetaldehyde —pharmaceutical raw material... denaturant . . . chemical intermediate ...etc. Company makes available upon request complete information and product samples.
198C Eastman Chem. Products

Acetamide, Crystal, Technical.....Company makes available an informative Data Sheet which covers pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-30081.
201a *Baker & Adamson.

Acetic Acid Salts of Fatty Amines..... Armacs are cationic materials unique in their ability to be absorbed onto metallic & non-metallic surfaces from liquid systems. Booklet covers characteristics & applications.
198D Armour & Co.

Acetic Anhydride.....Features high purity...by the drum or by the tank car...delivered promptly. For complete information on this product and other anhydrides produced, request Booklet No. F-5280A.
198E Carbide & Carbon Chem.

Acetic Anhydride.....A colorless liquid with a very pungent, acetic acid-like odor. Covers physical properties, specifications, uses, hazards, chemical reactions, shipping & handling, etc. in Bulletin N-32-2.
198F Celanese Corp. of America.

Acetic Anhydride.....Eastman acetic anhydride—acetylating agent . . . dehydrating agent in nitration and sulfonation reactions, etc. Makes available complete technical information plus product samples.
198G Eastman Chem. Products.

Acetoacetanilide.....Applications for acetoacetanilide include manufacture of yellow dyes such as Hansa and benzidine yellows. Company announces the availability upon request of product literature.
203-4m *U. S. Industrial Chem Co.

Acetoacetarylamides.....Valuable bulletin describes the various arylamides including acetoacetanilide, acetoacet-o-toluidide, acetoacet-o-chloranilide, and acetoacet-o-anisidide. Request Technical Bulletin No. F-8259.
198H Carbide & Carbon Chem.

Acetone.....High specification material —over 99.5% pure. Its purity, uniformity & constant supply are assured because it is produced synthetically. Wide range of solvent uses in booklet, "Keytones."—No. F-4767.
198I Carbide & Carbon Chem.

Acetone.....A solvent for cellulose acetate & the whole range of nitrocellulose lacquers. Used as a raw material in pharmaceuticals, dyes, & plastics. For full details, request product literature.
203-4i *U. S. Industrial Chem. Co.

Acetone.....Colorless, highly flammable liquid...a powerful solvent for cellulose acetate. Physical properties, Celanese specifications, shipping & handling, toxicology, etc. in Bulletin No. P-20-139-1-3-54.
198J Harwick Standard Chem.

Acetone.....12 p. reference includes physical and physiological properties, specifications, constant-boiling mixtures, general solvent properties, and resin solubilities. Request Data Folder No. F-8650.
198K Carbide & Carbon Chem.

Acetonitrile.....Versatile solvent for coatings—synthetic fibers—fats and oils processing . . . reactive intermediate for pharmaceuticals and other chemicals. Data on solvent properties and chemical reactivity.
198L Carbide & Carbon Chem.

Acetyl Chloride, Technical.....Company makes available an informative Data Sheet which covers pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-30151.
201b *Baker & Adamson.

Acetyl Peroxide.....A safe method of isolation of acetyl peroxide. Relatively pure acetyl peroxide may be isolated from its commercial solvent solution by vacuum distillation. For complete data refer to Bulletin 28.
213z *Buffalo Electro-Chem. Co.

Acetyl Peroxide.....Company makes available upon request a literature reference covering their line of acetyl peroxide. Includes a detailed outline of the physical and chemical properties. Bulletin No. 5.
213u *Buffalo Electro-Chem. Co.

Acetyl Tributyl Citrate.....Now you can get odor-free Citroflex A-4 (acetyl tributyl citrate) . . . a plasticizer with an extremely low order of toxicity. Features many applications. Literature & product sample.
198M Chas. Pfizer & Co.

Acetylene.....At Calvert City, Ky. and at Louisville, Ky., National Carbide can supply you with pipeline delivery of high purity carbide acetylene. Request copy of "The Chemical Century Comes to Calvert City."
198N National Carbide Co.

*From advt., this issue

Acid, Acetic.....Eastman acetic acid—organic synthesis . . . reaction medium and solvent . . . dyeing assistant . . . etc. Company makes available upon request detailed information and product samples.
199A Eastman Chem. Products.

Acid, Acetic, Glacial.....Includes—physical properties; specifications; hazards; uses; chemical reactions; shipping and handling; storage; materials of construction; etc. Request Product Bulletin S-04-3.
199B Celanese Corp. of America.

Acid, Alkanesulfonic.....Furnishes data on alkanesulfonic acid . . . an unusually effective catalyst where degradation of sensitive organic reactants must be avoided. Nonsulfonating, nonoxidizing. Bulletin 11.
199C Indoil Chem. Co.

Acid Anhydrous, Hydrofluoric.....40 p. book contains valuable information concerning hydrofluoric acid anhydrous. Provides useful data for those who now use HF, or for those who are contemplating its use.
199D Harshaw Chem. Co.

Acid, Ascorbic.....The antiscorbutic vitamin...antioxidant in food industry ...reduces smoking time, improves cure color, retards fading in cooked & cured meat products, etc. Technical Information Sheets.
199E Mallinckrodt Chem. Wks.

Acid, Azelaic.....Economic replacement for high-priced dibasic acids has unlimited potential use in plasticizers, alkyd resins, polyesters, polyamides & synthetic lubricants. Sample & descriptive technical literature.
199F Emery Industries.

Acid, Barbituric.....Offers a Technical Data Bulletin containing properties and specifications, data on packaging and toxicity, as well as suggested applications and a resume of past experimental work. 8 p.
199G Kay-Fries Chem.

Acid, Benzene Phosphonic.....Suggested uses: solid acid; intermediate for forming metallic salts used as antifouling agents for paints; catalyst for urea formaldehyde and related resins. Offers a product sample.
199H Victor Chem. Wks.

Acid, b-Benzoylacrylic.....In addition to covering chemical reactions and uses of the acid, booklet contains data on the physical properties and a list of 40 literature references. Technical Bulletin No. I-6.
199I National Aniline Div.

Acid, Boric.....Technical Bulletin provides complete information. Includes theoretical composition, solubility in water, chemical specifications, typical screen analysis, industrial end uses, etc. Request No. 3.
199J Pacific Coast Borax Co.

Acid, Boric, Anhydrous.....Widely used in the preparation of fluxes & for special enamel & glass compositions. Typical chemical analysis, typical screen analysis, shipping data, etc. in Technical Bulletin No. 4
199K Pacific Coast Borax Co.

Acid, n-Butyric.....Eastman butyric acid...for the preparation of butyric esters useful in formulating perfumes and flavorings. Makes available upon request complete technical information plus product samples.
199L Eastman Chem. Products.

Acid, Butyric, N-Coco B Amino.....An amphoteric amine derivative, the salts of which make excellent detergent additives as foam boosters and stabilizers. Request Market Development Technical Bulletin.
199M Armour Chem. Div.

Acid, b-Chloropropionic.....Suggested uses: intermediate for resins, surface-active agents, herbicides and diverse synthetic organic chemicals. Request company's Technical Data Sheet for further information.
199N Monsanto Chem. Co.

Acid, Chromic.....Informative literature includes a complete technical description, acid properties, principal uses, composition, data on packing, shipping regulations, etc. Request Bulletin No. 06-22-2-3-54.
199O Harwick Standard Chem.

Acid, Citric.....Important chemical in many metal cleaning pastes & liquid formulations for both home & industrial use. Data in "Ammonium Citrate & Citric Acid in Scale & Rust Removal," Bulletin No. 15.
199P Chas. Pfizer & Co.

Acid, Cresylic.....18 p. Technical Bulletin offers valuable data covering physical properties, chemical properties, Oronite cresylic acids (grades, characteristics & tests, general properties), applications, etc.
199Q Oronite Chem. Co.

Acid, Cyanoacetic.....Cyanoacetic acid is an intermediate for amino acids, barbiturates, dyes, the purine group, vitamins and other drugs. For complete product information request valuable Technical Bulletin.
199R Kay-Fries Chem.

Acid, Dichloroacetic.....A strong organic acid—undergoes the normal reactions of such acids. Announces the availability of a Technical Bulletin covering Kay-Fries specifications, typical reactions, etc.
199S Kay-Fries Chem.

Acid Esters, Citric.....Features & uses for line of acetyl triethyl citrate, triethyl citrate, acetyl tributyl citrate, tributyl citrate. Request Technical Bulletin No. 31, "Pfizer Citric Acid Esters as Plasticizers."
199T Chas. Pfizer & Co.

Acid, Fluoboric, 48-50%, Purified..... Makes available an informative Data Sheet which covers pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-30691.
201c *Baker & Adamson.

Acid, Formic.....Points the way to better quality in many products—possesses a combination of properties which make it the preferred acid for industrial applications. Offers detailed Technical Bulletin.
199U Heyden Chem. Corp.

Acid, Fumaric.....Data on use in coatings & polyester resins. Covers such subjects as chemical reactions, fumaric acid in drying oils, in tall oil varnishes, in steam-set inks, & in polyester resins. Bulletin O-115.
199V Monsanto Chem. Co.

Acid, Hydrobromic.....Bromide intermediates made with hydrobromic acid often provide a higher yield of finished products and more economical production. Request complete information and detailed Catalog.
199W Michigan Chem. Corp.

Acid, Hydrofluoric.....Company announces availability of an informative Data Sheet which covers pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-49791.
201d *Baker & Adamson.

Acid, Hydroxyacetic.....A proven organic acid for numerous industrial applications. Provides complete description, specifications, chemical and physical properties, suggested uses, bibliography, etc.—on request.
199X E. I. du Pont de Nemours.

Acid, Isosebacic.....A new synthetic organic chemical—now being produced in pilot plant quantities for evaluation by research & development groups throughout the chemical industry. Product samples & Data Sheets.
199Y U. S. Industrial Chem. Co.

Acid, Isocinchomeronic.....Valuable data on new heterocyclic dibasic acid. New Product Information Bulletin describes the physical and chemical properties, typical reactions, suggested uses, availability, etc.
199Z E. I. du Pont de Nemours

Acid, Itaconic.....Two carboxyl groups, a conjugated double bond and an active methylene group make Pfizer itaconic acid a reactive and versatile molecule. Offers Technical Bulletin No. 82 plus one-lb. sample.
199AA Chas. Pfizer & Co.

Acid, Methacrylic, Glacial.....18 p. descriptive Bulletin provides information regarding: availability and containers; typical properties and specifications; handling; removal of inhibitor by distillation; etc.
199BB Rohm & Haas Co.

Acid, Molybdic, 85% Purified.....Company makes available an informative Data Sheet which covers pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-31181.
201e *Baker & Adamson.

Acid, Muriatic.....Produced from inorganic materials &, at Niagara Falls, is made directly by burning hydrogen with chlorine. You can be sure of purity, quality & consistency of grade to specifications. Request samples.
199CC International Min. & Chem.

Acid, Oleic.....Truly sulfonated oleic acid gaining wide acceptance. Its stability & effectiveness, particularly in low pH ranges, have opened many new fields of application. Provides samples & literature.
199DD Tennessee Corp.

Acid, Oleic.....Announces the release of a 20 p. comprehensive booklet on oleic acid. Covers the various means of evaluating oleic acids with emphasis on end-product performance. Request "Emersol Oleic Acids."
199EE Emery Industries.

Acid, Oxalic.....Long recognized for its consistently high purity . . . a clear, colorless product which assays a minimum of 99.2% $C_2H_2O_4 \cdot 2H_2O$. In coarse & fine crystal forms to meet every need. Data & samples.
199FF General Chem. Div.

Acid, Oxalic.....Because Pfizer oxalic acid solubilizes iron oxide, it is chief ingredient in radiator cleaning compounds. Company makes available complete information in detailed Technical Bulletin No. 34.
199GG Chas. Pfizer & Co.

Acid, Pelargonic.....Emfac pelargonic acid improves high-bake enamels four ways. Furnishes a product sample, Technical Bulletin, and descriptive literature on the use of pelargonic in high-baked enamels.
199HH Emery Industries.

Acid, Peracetic.....Peracetic acid 40%, a new germicide-fungicide for the food industry—covers general & germicidal properties & use for fermicidal washes for produce & processing equipment. Bulletin No. 15.
213rr *Buffalo Electro-Chem. Co.

Acid, Peracetic.....Company announces the availability of a valuable article reprint entitled, "Application of Peracetic Acid Germicidal Washes to Mold Control of Tomatoes." Request Bulletin No. 15A.
213ss *Buffalo Electro-Chem. Co.

Acid, Peracetic.....Bleaching acetate rayon & nylon fabrics with Becco peracetic acid—offers outline of peracetic acid bleaching processes & bleaching formulas as used in textile mills. Bulletin No. 44.
199II Buffalo Electro-Chem. Co.

Acid, Peracetic.....Successful bleaching of type 670 nylon—article reprint contains detailed mill procedures for bleaching nylon type 670 and nylon type 200 with peracetic acid. Request Bulletin No. 60.
213ii *Buffalo Electro-Chem. Co.

Acid, Peracetic (40%).....Chemical and physical properties of peracetic acid are discussed and examples of typical reactions and uses given. Other data pertains to precautions in handling material. Bulletin No. 4.
213r *Buffalo Electro-Chem. Co.

Chemicals

Acid, Phenylacetic—Aliphatic Nitrogen Compounds

Acid, Phenylacetic.....Suggested uses: an intermediate for drugs (antispasmodics, sedatives, antiseptics, and anticoagulants); perfume aromatics; insect repellents; etc. Details in valuable Technical Bulletin.
200A Kay-Fries Chem.

Acid Phosphates, Alkyl.....Available in quantities ranging from experimental to semi-commercial—methyl acid phosphate—n-Butyl acid phosphate—amyl acid phosphate—iso octyl acid phosphate—etc. Data & samples.
200B Oldbury Electro-Chem. Co.

Acid, Phosphoric.....Chemical of a thousand uses . . . AA Quality phosphoric acid, in its various grades, amply & consistently meets national formulary & pure food specifications. Data Sheet offers full details.
200C American Agricultural Chem.

Acid, Pyromellitic.....Presents a New Product Information Bulletin which covers details on suggested uses, physical and chemical properties, toxicity, availability, etc. Also includes a list of references.
200D E. I. du Pont de Nemours.

Acid, Silicic SL.....Fine, white, bulky powder; odorless. Used in the manufacture of silicate phosphors for fluorescent and television tubes. Offers complete details in company's Technical Information Sheet.
200E Mallinckrodt Chem. Wks.

Acid, Sorbic.....Company makes available a reference containing detailed technical information—physical properties, solubility data, net container weights, uses, a bibliography, etc. Request No. F-8526.
200F Carbide & Carbon Chem.

Acid, Stearic.....Develops a new triple pressed stearic acid—Neo-Fat 18-55—to give you higher quality at no increase in price. Features advantages of heat and color stability. Product samples made available.
200G Armour Chem. Div.

Acid, Thiomalic.....Only commercially available dicarboxylic acid containing a reactive mercapto group as well as 2 carboxyl groups. Covers properties in addition to 40 literature references. Technical Bulletin No. 1-9.
200H National Aniline Inc.

Acid, Undecylenic.....A high degree of chemical reactivity is assured thru structural features rarely found in fatty acids, such as an odd number of carbon atoms & vinyl unsaturation. Property Sheet & Search Report.
200I Baker Caster Oil Co.

Acids, Fatty.....High-purity Hystrene hard saturated fatty acids are now supplied in labor-saving palletized units of forty bags each. Folder lists complete specifications & describes new shipping method.
200J Atlas Powder Co.

Acids, Fatty.....24 p. booklet offers specifications, grades, packing, & stock points on distilled stearic, oleic, coconut, cotton seed, soya & palm fatty acids. Request "Fatty Acids in Modern Industry."
200K A. Gross & Co.

Acids, Fatty.....Makes available valuable chart, "A Guide to Better Fatty Acids." Technical data on stearic acid, oleic acid, hydrogenated fatty acids, animal fatty acids, vegetable fatty acids, pitches, etc.
200L Wilson-Martin Div.

Acids, Fatty.....Mineral ore output by froth flotation is on the increase, & General Mills assisted in the development with Aliphats specifically designed for ore flotation. Full data on inexpensive fatty acids.
200M General Mills.

Acids, Fatty.....Metallic soaps made from Neo-Fat 10 have desired compatibility with vinyl films & do not contribute to cloudiness, bloom or yellowing in finished products. Sample & Coco Fatty Acids Booklet.
200N Armour Chem. Div.

Acids, Fatty.....Coconut oil fatty acids feature controlled chemical composition . . . so you get better & easier control during processing—plus a better, more uniform end product. Samples & specifications.
200O El Dorado Oil Wks.

Acrolein.....Because of the reactivity of their aldehyde and ethylenic groups, acrolein and methacrolein can lead the way to an almost unlimited number of products. Offers complete information and product samples.
200P Carbide & Carbon Chem.

Acrylamide.....Cyanamid's acrylamide now available in semi-commercial quantities for use in adhesive...fibers ...graphical arts...leather...plasticizers...etc. Offers New Product Bulletin & sample.
200Q American Cyanamid Co.

Acrylic Copolymer Emulsions.....Makes available a new comprehensive brochure covering acrylic copolymer emulsions. Shows you how to take advantage of company's personalized polymer service. Brochure P-57.
200R American Polymer Co.

Acrylonitrile.....Furnishes a 44-by-34 inch comprehensive wall chart which shows chemical methods for converting acrylonitrile into more than 100 derivatives. Literature summary of potential uses for derivatives.
200S Monsanto Chem. Co.

Acrylonitrile.....16 p. booklet, "The Toxicology of Acrylonitrile," contains abstracts of the more important experimental data, both from published literature & company's files. Includes bibliography.
200T American Cyanamid Co.

Acrylonitrile.....Reactions of acrylonitrile and its major uses are described. Includes properties, constant-boiling mixtures, specifications, and shipping information. Technical Bulletin No. F-8381.
200U Carbide & Carbon Chem.

Addition Agents.....Santolene J, a new addition agent, reduces sedimentation of base oils. Describes this valuable product and contains results of stability, sedimentation and rusting tests, in Technical Bulletin.
200V Monsanto Chem. Co.

Additives.....Provides data on Lubricin N-1—company's low cost additive. Offers valuable uses as: crank case oil additive; motor fuel additive; cutting oil additive. Includes sample with Technical Bulletin 16.
200W Baker Castor Oil Co.

Additives.....Lubricants compounded with Santopoid 44 provides complete passenger car hypoid protection under the most severe road test and laboratory conditions. Find complete details in Technical Bulletin.
200X Monsanto Chem. Co.

Additives, Borate.....Adaptable for use with coating grade polyvinyl acetate to develop inexpensive washable fire resistant qualities in insulating and wallboard coating for industrial and non-industrial uses.
200Y American Potash & Chem.

Alcohol, Amyl, Refined.....Makes available descriptive literature covering line of refined amyl alcohol. Applications include raw material for the manufacture of fine chemicals, pharmaceuticals, etc.
203-4a *U. S. Industrial Chem. Co.

Alcohol, Furfuryl.....Derived from agricultural residues & useful in manufacture of wide variety of products including resinous mortars, cements, binder resins, etc. Data on properties & uses in Bulletin No. 205.
200Z Quaker Oats Co.

Alcohol, Isooctyl.....Indoil isooctyl alcohol is of outstanding esterification quality. An excellent solvent & a starting point for various chemical syntheses. Request product sample & Technical Bulletin 22.
200AA Indoil Chem. Co.

Alcohol, Polyvinyl.....Elvanol produces tough, grease-resistant films. Films have high tensile strength, impermeability to gases, and resistance to tearing or puncturing. Request literature and information.
200BB E. I. du Pont de Nemours.

Acohol, Polyvinyl.....Rigidly controlled for uniformly high quality. Free-flowing and fast-dissolving—white and non-gelling. A dependable source for quick delivery. Furnishes complete data and product samples.
200CC Colton Chem. Co.

Alcohol, Propargyl.....Three centers of reactivity. Chemical intermediate for pharmaceuticals, agricultural chemicals, etc. Corrosion inhibitor & stabilizer for halogenated compounds. Sample & technical information.
200DD General Aniline & Film Corp.

Alcohol, Tetrahydrofurfuryl.....THFA is a convenient starting point for preparation of high boiling esters & ethers where its function is that of a primary alcohol. Offers Bulletin No. 87 C plus a product sample.
200EE Quaker Oats Co.

Alcohols.....52 p. includes valuable data on 20 alcohols sold in commercial quantities. Covers uses & suggested applications, properties, shipping, test methods, etc. Photographs and charts. Book No. F-4731.
200FF Carbide & Carbon Chem.

Alcohols.....Dytol alcohols available in quantity . . . are of high, uniform quality, & undergo reactions typical of alcohols: ethoxylation, sulfation, esterfication, halogenation, dehydration, etc. Full information.
200GG Rohm & Haas Co.

Alcohols, Fatty.....Presents booklet, "Possibilities," which sums up over 25 years of working research—tells you how to use vacuum-distilled NF, USP, or technical grades of cetyl, oleyl, and stearyl alcohols.
200HH M. Michel & Co.

Alcohols, Fatty.....Alcohols of almost any desired chain length or degree of unsaturation can be produced commercially from natural fats & oils in sodium reduction process. Data in "Fatty Alcohols for Industry."
200II Ethyl Corp.

Alcohols, Fatty.....Ethoxylated, these Makanols provide outstanding advantages as emulsifiers and for use as non-ionic detergents. Company offers fully descriptive information plus valuable product samples.
200JJ Stepan Chem. Co.

Alcohols, Fatty.....Technical Bulletin covers saturated & unsaturated fatty alcohols. Includes: typical analysis; typical composition; physical properties; typical solvents; suggested industrial applications; etc.
200KK Archer-Daniels-Midland Co.

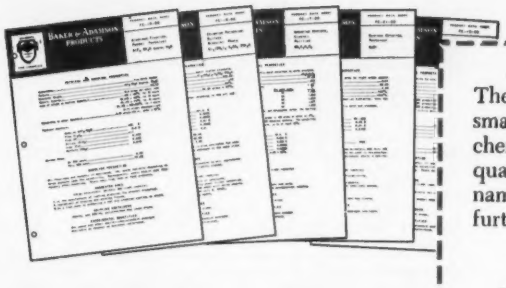
Alicyclic Compounds.....Derivatives of cyclopentane—cyclohexane. Offers important data on cyclopentanone, cyclopentanone oxime, cyclopentanol, cyclopentyl chloride, cyclohexene, cyclohexyl chloride, etc.
200LL Arapahoe Chem.

Aliphatic Derivatives.....16 p. Bulletin describes aliphatic derivatives (saturated hydrocarbons, olefins, chlorides, mercaptans, ethers, etc.). Also sodium derivatives and alkenyl succinic acid anhydrides.
200MM Humphrey-Wilkinson.

Aliphatic Nitrogen Compounds.....Illustrated, 48 p. fully describes line of aliphatic nitrogen compounds for emulsifying — neutralizing — synthesizing — dissolving — saponifying. Request reference, No. F-4770C.
200NN Carbide & Carbon Chem.

*From advt., this issue

For Production and Research Men who use High Purity Process Chemicals . . .



YOURS! EXCLUSIVE NEW DATA ON ALL THESE → B&A Fine Chemicals

If Your Operations Involve high purity process chemicals, you will undoubtedly want to know more about one or several of the Baker & Adamson Fine Chemicals listed here. Each now has important industrial applications . . . each is worthy of investigation for many other uses suggested by its particular properties.

To Help You make preliminary evaluation of these important new process chemicals, General Chemical has prepared a special data sheet for each. These sheets cover pertinent physical and chemical properties, suggested uses, containers, etc. Since many of these fine chemicals are relatively new to the industrial scene, data on them are frequently not available in standard references, thus you will find these particular B&A data sheets of more than ordinary value.

To Obtain Data sheets on the B&A Fine Chemicals that interest you, just check the items, cut out the list and mail it with your business letter head.

REAGENTS
B&A
STANDARD OF PURITY
FINE CHEMICALS

GC Allied Chemical

The following fine chemicals represent a small cross section of the many high purity chemicals bearing the "B&A" shield of quality. Please put check in box before name of each product on which you want further information.

Product	Data Sheet No.
☐ Acetamide, Crystal, Technical	DA-30081
☐ Acetyl Chloride, Technical	DA-30151
☐ Acid Fluoboric, 48-50%, Purified	DA-30691
☐ Acid Hydrofluoric, 48% (C.P.) A.C.S.	DA-49791
☐ Acid Molybdic, 85% Purified	DA-31181
☐ Acid Oxalic, Anhydrous	DA-31341
☐ Aluminum Fluoride, Powder, Technical	DA-32521
☐ Aluminum Nitrate, Crystal, Technical	DA-32341
☐ Aluminum Sulfate, Hexahydrate, Technical	DA-48871
☐ Ammonium Acetate, Crystal, Purified	DA-32711
☐ Ammonium Fluoborate, Crystal, Technical	DA-32731
☐ Ammonium Fluoride, Crystal, Technical	DA-32671
☐ Ammonium Oxalate, Granular, Purified	DA-33251
☐ Ammonium Persulfate, Crystal, 98%, Purified	DA-33091
☐ Ammonium Sulfate, Purified	DA-33151
☐ Ammonium Sulfite, Crystal, Purified	DA-33231
☐ Barium Fluoride, Technical	DA-34181
☐ Boron Trifluoride, Ether Complex, Technical	DA-34711
☐ Boron Trifluoride, Phenol Complex, Technical	DA-34681
☐ Boron Trifluoride, Compressed Gas	DA-34691
☐ Calcium Acetate, Powder, Purified	DA-34991
☐ Calcium Chloride, Anhydrous, Purified	DA-49211
☐ Calcium Chloride, U.S.P.	DA-35011
☐ Calcium Fluoride, Powder, Reagent	DA-35201
☐ Calcium Phosphide, Technical	DA-35341
☐ Chromium Fluoride, Technical	DA-35771
☐ Chromium Nitrate, Crystal, Purified	DA-35801
☐ Chromium Nitrate, Solution, Technical	DA-49711
☐ Chromium Potassium Fluoride, Purified	DA-35791
☐ Chromium Potassium Sulfate, Granular, Photo	DA-35841
☐ Cupric Acetate, Crystal, Technical	DA-36271
☐ Cupric Fluoride, Technical	DA-36481
☐ Cupric Nitrate, Crystal, Purified	DA-36421
☐ Cupric Nitrate, Solution, Technical	DA-49701
☐ Cuprous Chloride, Technical	DA-36571
☐ Ferric Nitrate, Crystal, Technical	DA-37441
☐ Ferrous Ammonium Sulfate, Crystal, Technical	DA-37571
☐ Ferrous Sulfate, Exsiccated, U.S.P.	DA-37671
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☐ Potassium Borate, Tetra, Purified	DA-40771
☐ Potassium Cyanate, Powder, Purified	DA-41591
☐ Potassium Cyanate, Powder, Technical	DA-48821
☐ Potassium Fluoride, Anhydrous, Purified	DA-40911
☐ Potassium Fluoride, Crystal, Purified	DA-41041
☐ Potassium Fluoborate, Crystal, Technical	DA-41361
☐ Potassium Nitrite, Fused, Lump	DA-85521
☐ Potassium Thiosulfate, Purified	DA-41521
☐ Potassium Titanium Fluoride	DA-40722
☐ Sodium Fluoborate, Crystal, Technical	DA-42401
☐ Stannous Chloride, Crystal, Technical	DA-43421
☐ Zinc Formate, Crystal, Purified	DA-44441

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BAKER & ADAMSON® *Fine Chemicals*

GENERAL CHEMICAL DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 RECTOR STREET, NEW YORK 6, N. Y.
SETTING THE PACE IN CHEMICAL PURITY SINCE 1882

Chemicals

Alkanolamides, Fatty—Antioxidants

Alkanolamides, Fatty . . . . . Announces publication of "The Fatty Alkanolamides—Emcol 5000 Series." Describes properties, uses & many formulations for this broad series of products. Technical Bulletin No. 44.
202A Emulsol Chem. Corp.

n-Alkenes.....Company announces the pilot plant production of a series of n-alkenes—new chemical intermediates made from fatty acids. Physical properties and other detailed information in Bulletin No. HC-1.
202B Armour & Co.

Alkyds, Flat.....New Brochure on FAFL—the alkyl for flats. Provides technical data on vehicle, & in addition a variety of suggested formulations for alkyd flat paints in white & colors. Also product samples.
202C Farnow, Inc.

Alkyds, Glycerine.....Informative 20 p. booklet offers practical value to users of alkyds as well as resin manufacturers. Assists in selecting alkyd resin that best meets specific needs of each coating requirement.
202D Glycerine Producers' Assoc.

Alkyl Aryl Sodium Sulfonate.....Covers pertinent data on availability; solubility in water, organic solvents, acids, alkalies, salts and electrolytes; surface tension; stability in acids, alkalies, salts, etc.
202E Petrochemicals Co.

Alkyl Benzyl Triethyl Ammonium Chloride .....New, 16 p. reference describes Emcol E-11. Includes uses, chemical and physical properties, general information, bacteriology and references. Technical Bulletin No. 45.
202F Emulsol Chem. Corp.

Alkyl Halides.....Technical Bulletin describes the alkyl chlorides of various chain lengths (Myristyl, C-14, Cetyl, C-16, and Stearyl, C-18). Find use in manufacture of quaternary ammonium compounds.
202G Aceto Chem. Co.

Alkylphenols.....Octylphenol and nonylphenol useful in the manufacture of synthetic resins, fungicides, germicides, dyestuffs, and pharmaceuticals. Company makes available complete technical information.
202H Rohm & Haas Co.

Alkylsodium Compounds.....Alkylsodium compounds are sodium derivatives of high reactivity and interesting properties. Describes properties, preparation, typical reactions, etc. in detailed Fact Sheet.
202I Ethyl Corp.

Alumina.....Alcoa aluminas are remarkably versatile wherever they are used . . . with hundreds of applications in catalysis, desiccation, refractories and ceramics. Announces availability on request of product samples.
202J Aluminum Co. of America.

Alumina, Activated.....Reynolds activated alumina dries to lowest dew points of any commercial dessicant. It is inert, easily reactivated, nondeliquescent and will not swell or disintegrate. Full data and samples.
202K Reynolds Metals Co.

Alumina, Calcined, Metallurgical Grade .....High purity and consistent composition. Eighty per cent of alumina is in crystalline form of alpha alumina. Request detailed information and product samples.
202L Reynolds Metals Co.

Aluminum Chloride, Anhydrous.....Offers 4 sizes for almost every processing need: fine grind; extra fine grind; coarse grind; coarse screened. Information in Data Sheet. Bulletin 100 covers products and services.
202M Hooker Electrochem Co.

Aluminum Nitrate, Crystal, Technical .....Makes available an informative Data Sheet which offers pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-32341.
201h *Baker & Adamson.

Aluminum Octoate.....Finds wide application in printing inks, where it contributes body without the loss of gloss. Physical properties, solubility, gelling properties, etc., in Technical Service Bulletin No. G-2.
202N Witco Chem. Co.

Aluminum Stearate Technical D Powder .....Soluble or dispersible in a wide variety of organic media, used as a gelling agent for lubricating greases and thickened oils. Details in Technical Information Sheet.
202O Mallinckrodt Chem. Wks.

Aluminum Sulfate, Hexahydrate, Technical.....Furnishes an informative Data Sheet which covers pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-48871.
201i *Baker & Adamson.

Amines, Secondary . . . . . Describes Armeen 2S and Armeen 2T—new (unsaturated) secondary amines, of particular interest in corrosion inhibition problems in oil systems. Request Market Development Technical Bulletin.
202P Armour Chem. Div.

Amines, Secondary.....Du Pont Sarcosine—a clear, aqueous solution of the sodium salt. It combines both basic and acidic properties . . . may have a faint odor of amine. Request literature and product samples.
202Q E. I. du Pont de Nemours.

Amines, Tertiary . . . . . Armeen DMS, DM16 & Armeen DM18—new tertiary amines (dimethyl soya, dimethyl palmityl & dimethyl stearyl) for evaluation in fields of sanitation, textile chemicals, etc. Tech. Bulletin.
202R Armour Chem. Div.

Amines, Tertiary.....N-coco morpholine & N-tallow morpholine — tertiary amines, useful in general emulsification problems, corrosion inhibition & the sanitation fields. Request Market Development Technical Bulletin.
202S Armour Chem. Div.

Amines, Tertiary-Alkyl Primary..... New 40 p. booklet covers line of tertiary-alkyl primary amines. Includes physical & chemical properties, suggested applications, chemical reactions, etc. Bulletin No. SP-33.
202T Rohm & Haas Co.

Aminoethyl Ethanolamine.....A hygroscopic liquid with a medium viscosity and a mild, ammoniacal odor. Describes applications, physical properties, specifications, handling precautions, etc., in Booklet F-6455A.
202U Carbide & Carbon Chem.

p-Aminophenol.....Du Pont p-Aminophenol is used to prepare pharmaceuticals, dyes, photographic chemicals, oil additives, and anti-oxidants. Request complete information concerning this valuable intermediate.
202V E. I. du Pont de Nemours.

Ammonia.....50 p. reference covers the technical aspects of handling, physical properties, and allied topics. Concerned with both anhydrous and aqua ammonia. Included are numerous drawings, charts, graphs, etc.
202W Spencer Chem. Co.

Ammonia, Anhydrous.....Versatile as raw material & in processing operations, CSC anhydrous ammonia, technical & refrigeration grades, is being used in numerous fields. Technical Data Sheet & 48 p. Bulletin.
202X Commercial Solvents Corp.

Ammonia, Anhydrous.....Major supplier of chemical aids to farmers, now produces anhydrous ammonia for direct application to soil, thus providing essential nitrogen at lowest cost per unit. Literature & samples.
202Y American Cyanamid Co.

Ammonia, Cylinder.....Company presents valuable handbook, "Guide to Use of Barrett Brand Cylinder Ammonia." Shows most economical usage — as well as containing chemical properties, handling charts, etc.
202Z Allied Chem. & Dye Corp.

Ammonia Leak Detector Kits.....Now offered upon request by manufacturer —a useful ammonia leak detector kit. These handy kits are conveniently pocket size, and can be put to use over and over again.
202AA Allied Chem. & Dye Corp.

Ammonium Acetate, Crystal, Purified .....Makes available an informative Data Sheet which offers pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-32711.
201j *Baker & Adamson.

Ammonium Biborate.....Covers theoretical composition, solubility in water, pH values, representative chemical analysis, typical screen analysis, containers, density & uses. Technical Bulletin No. 8.
202BB Pacific Coast Borax Co.

Ammonium Fluoride, Crystal, Technical .....Makes available an informative Data Sheet which offers pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-32671.
201l *Baker & Adamson.

Ammonium Molybdate.....Company announces the availability upon request of informative literature, "Preparation of Ammonium Molybdate Solutions (1955)" . . . a suggested commercial process. Bulletin No. Ch-5.
202CC Climax Molybdenum Co.

Ammonium Oxalate.....B&A purified ammonium oxalate preferred by blueprint and diazo whiteprint paper manufacturers. It is very low in iron, heavy metals and other undesirable impurities. Data Sheet DA-33251.
201m *Baker & Adamson.

Ammonium Pentaborate . . . . . Principle uses are: as a component of electrolytes for electrolytic condensers; an ingredient in fireproofing formulas; in the coating of paper. Full data in Technical Bulletin No. 5.
202DD Pacific Coast Borax Co.

Ammonium Persulfate.....Company makes available on request a literature reference covering line of ammonium persulfate. Includes data on chemical & physical properties, uses & handling. Product Bulletin No. 49.
213p *Buffalo Electro-Chem. Co.

Ammonium Thiocyanate.....Specification Manual gives complete information on the properties and uses of ammonium thiocyanate, properties of aqueous solutions of ammonium thiocyanate, etc. Fully detailed.
202EE J. T. Baker Chem. Co.

Ammonium Thiosulfate Solution . . . . . Stable, high-purity chemical . . . a clear, colorless solution assaying approximately 60% $(NH_4)_2S_2O_3$—particularly low in iron, lead & other heavy metals. Information & samples.
202FF General Chem. Div.

Amprozyme.....Contains high potency standardized amylolytic (starch solubilizing) enzymes used in breakdown of starch paste, solubilization of starch matter, removal of starch size from fabric. Data & test sample.
202GG Jacques Wolf & Co.

Antioxidants.....Newly developed antioxidant—Ional-CP—defends fats & oils against oxidative spoilage. A convenient, safe & inexpensive way to combat rancidity in food & drugs. "Ionol as a General Antioxidant."
202HH Shell Chem. Corp.

Antioxidants.....Announces newly developed antioxidant, "Compound 19." Effectively prevents odor & color reversion in alkyl aryl sulfonates & is now being used commercially for this purpose. Data & samples.
202II Sindar Corp.

*From advt., this issue

U. S. INDUSTRIAL CHEMICALS CO.

Division of National Distillers Products Corporation, 99 Park Ave., N.Y. 16

Complete technical information on any of the U.S.I. products described here is available in the form of booklets and data sheets and in U.S.I.'s two catalogs—"Chemicals," and "Alcohols." Write for your copy.

PRODUCT AND CHEMICAL FORMULA	Distillation Range Limits in deg. C.	Flash Point (open cup) in deg. F.	Evaporation Rate Minutes	Acidity: Free acid, not more than—	Specific Gravity 20°/20°C.	APPLICATIONS	CONTAINERS
ALCOHOLS							
Amyl Alcohol, Refined	128–132	127	....	.01% as acetic	0.811–0.815	Raw material for manufacture of fine chemicals, pharmaceuticals.	8,000-gal. tank cars, 30,000-lb. drum cars. 3x2,000-gal. compartment tank cars, 55- and 5-gal. drums, 1-gal. cans.
Butanol (Normal Butyl Alcohol) C_4H_9OH	115–118	115	67	.005% as acetic	0.810–0.813	A strong solvent for many organic materials. Slow evaporation rate makes it particularly important as latent solvent for nitrocellulose and resins. Chemical synthesis.	Same as amyl alcohol.
Ethanol (Ethyl Alcohol) C_2H_5OH	Ethyl Alcohol—U.S.P.—190 Proof and Absolute 200 Proof All regular and anhydrous formulas of specially and completely denatured alcohol						
***Filmex**	70–81	60	....	0.02 max.	0.814 max.	Special proprietary denatured alcohol solvent authorized for use in specialized industries.	5-gal., 54-gal. steel drums. Also tank wagon to users having authorization of Alcohol Tax Unit, Internal Revenue Service.
Fusel Oil, Refined	110–135	123	103½	.01% as acetic	0.811–0.815	A blend of amyl alcohols refined by chemical treatment and distillation.	Same as amyl alcohol.
***Solox** (Proprietary alcohol-type solvent: Regular, 190 proof. Anhydrous, 200 proof)	...	71	....	.02 gm. per 100 cc. as acetic	0.816† (Reg.) 0.796† (Anhy.)	Shellac solvent and general solvent, fuel oil conditioner, cleanser, cleaning compounds, lacquers, paint removers, polishes, etc. In spirit varnishes and in purification, extraction and crystallization processes.	Same ar amyl alcohol.
SOLVENTS							
***Ansol M** (Blend of Ethanol, esters and hydrocarbons)	70–90	52	14.5	.01% as acetic	0.796–0.800	Anhydrous solvent for many resins not soluble in ethanol alone, solvent for SS nitrocellulose. Used as lacquer solvent and thinner in dopes, plastic cements, celluloid, cleaners, paper, lacquer, thinners, linoleum, varnish, etc.	Same as amyl alcohol except 36,000-lb. drum cars.
***Ansol PR** (Blend of anhydrous denatured ethanol, esters, and hydrocarbons)	70–90	54	9	.01% as acetic	0.841–0.845	Anhydrous solvent comparing favorably with ethyl acetate in solvent power, evaporation rate, boiling point and odor. Used as lacquer solvent and thinner in dopes, celluloid, paper, cleaners, decalcomanias, linoleum, cement, paint removers, varnishes.	Same as amyl alcohol except 36,000-lb. drum cars.
Other special solvent blends—Specifications on request.							
Butyl Acetate Normal $CH_3COOC_4H_9$	115–135	100	34.75	.01% as acetic	0.874–0.878	Most widely used medium-evaporating nitrocellulose solvent. Used in airplane dopes, artificial pearl, celluloid, cements, coated paper, lacquers, plastic wood, thinners, leather finishes, linoleum, textile sizing, etc.	Same as amyl alcohol.
Ethyl Acetate $CH_3COOC_2H_5$ Commercial, 85–88% (95–98%, 99%, and U.S.P. also available)	70–80	42	11.25	.01% as acetic	0.882–0.886	Excellent solvent for cellulose esters, resins, etc. Also used in acetic acid extraction, candy glaze, cleaners, denatured alcohols, flavorings, perfumes, rayon, pharmaceuticals, smokeless powder, paint removers, spirit varnishes, etc.	Same as amyl alcohol.
Ethyl Ether, U.S.P. $(C_2H_5)_2O$ (Also absolute A.C.S., Refined and Technical grade)	.....	Below 0°F.	....	= 0.4 cc. 0.02N NaOH per 100 cc.	.713–.716	Widely used in manufacture of smokeless powder and in extracting fats. An essential laboratory reagent. Chemical synthesis.	48,000-lb. tank cars, 30,000-lb. drum cars, 55- and 5-gal. steel drums.
Acetone $(CH_3)_2CO$	55.6–57.1	14	5.5	.002% as carbon dioxide	0.791–0.799	A solvent for cellulose acetate and the whole range of nitrocellulose lacquers. Used as a raw material in pharmaceuticals, dyes, and plastics; and as a dewaxing agent for lubricating oils. Chemical synthesis.	Same as amyl alcohol.
Diethyl Oxalate $(COOC_2H_5)_2$	180–190	168	....	.05% as oxalic	1.075–1.079	Used in radio tube cathode coating, to prevent rapid drying of nitrocellulose printing inks, etc. Also in organic syntheses.	Same as amyl alcohol except 36,000-lb. drum cars.
Diatol* (Ethyl Carbonate 90%)	100–130	82	35	.02% as carbonic	.954–.957	A nearly-neutral, mild-odor, medium-evaporating nitrocellulose solvent, used in lacquers, radio tubes, etc.	Same as amyl alcohol except 36,000-lb. drum cars.
Diethyl Carbonate $(C_2H_5)_2CO_3$	120–130	115	34.75	.02% as carbonic	.973–.977	Similar to Diatol*, also in synthesizing phenobarbital and other organics.	Same as amyl alcohol except 36,000-lb. drum cars.

* Registered Trade Mark.
† 60°/60°F.

U. S. INDUSTRIAL CHEMICALS CO. Division of National Distillers Products Corporation

U. S. I. INTERMEDIATES

PRODUCT	FORMULA	COLOR	MELTING POINT (Deg. C.)	PURITY	APPLICATIONS	CONTAINERS
Acetoacetanilide	$CH_3COCH_2CONHC_6H_5$	White	82.5	97%	Manufacture of yellow dyes such as Hansa and benzidine yellows.	200
Acetoacet-ortho-chloranilide	$CH_3COCH_2CONHC_6H_4Cl$	White	102.5	97%		250
Acetoacet-ortho-toluidide	$CH_3COCH_2CONHC_6H_4CH_3$	White	104–105	96%		250
Special arylides						
Ethyl Acetoacetate	$CH_3COCH_2COOC_2H_5$	Nearly water white		96.5%		
Ethyl Benzoylacetate	$C_6H_5COCH_2COOC_2H_5$	Light yellow	Dist. Range 144–148 at 10 mm. pressure	95%	Manufacture of dyes and pharmaceuticals, organic syntheses.	55- and 5-gal. drums 1-gal. bottles.
Ethyl Sodium Oxalacetate	$C_2H_5OOCC(ONa):CHCOOC_2H_5$	Light yellow	....	92%	As a highly reactive intermediate in production of ore-refining flotation agents and other organic syntheses.	Fibre drums, net weight 175 lbs.
Ethyl Chloroformate	$ClCOOC_2H_5$	Water white	....	95%		5-gal. and 3-gal. carboys.

METALLIC SODIUM

Available for immediate shipment.

Price quotations can be secured from **U.S.I.** at 99 Park Ave., or from any branch sales office.

FOR INDUSTRY

Bricks— 12, 5, 2½ and 1 lb. (55-gallon returnable steel barrels).
Solid— 400 lb. net (55-gallon nonreturnable steel drums).
Tank cars—80,000 lbs.

FOR RESEARCH AND DEVELOPMENT

1 or 2 lb. bricks (3½ gallon steel pails, 20 lbs. net).

Na Na Na Na Na

Technical Service is available upon request on all aspects of sodium chemistry and handling procedures.

LITERATURE

Handling Metallic Sodium is a comprehensive handbook covering equipment and handling procedures.

Sodium Dispersions consist of microscopic sodium particles (1-20 microns) suspended in inert hydrocarbons. Booklet covers properties, applications; tells how to prepare and handle sodium in this form on laboratory and plant scale.

High Surface Sodium on Inert Solids may be visualized as extremely thin sodium films on finely divided solid carriers. Such sodium-coated solids can carry over 30% Na; yet the films are calculated to be only 5 atoms thick. Discusses uses for this extremely reactive, free-flowing form of sodium, explains preparation, handling for laboratory and plant operations.

POLYETHYLENE RESINS

Petrothene† 100—High quality resin for those applications demanding outstanding flow properties. Especially recommended for extrusion into film or for blow molding.

Petrothene† 200—General purpose resin for injection, extrusion, compression molding.

Colors—Available in natural color only.

Packaging—Packed in 50 lb. multiwall bags.

Warehousing—Warehoused for your convenience in East Coast, Midwest, and West Coast locations.

FEED CONCENTRATES

Antibiotic Feed Supplements—Containing guaranteed amounts of antibiotic; Bacitracin or Procaine penicillin.

Calcium Pantothenate (Feed Grade)—One of the B complex vitamins necessary for optimum growth.

Choline Chloride—25% dry or 70% aqueous solution.

Curbay B-G*—Dried Molasses Fermentation Solubles.

Menadione (Vitamin K_3)—A dry product especially suitable for pelleting. Compatible with other vitamins, antibiotics.

DL-Methionine (Feed Grade)—An essential amino acid used in high energy feeds and concentrates.

Niacin, U. S. P.—A member of the B complex vitamin group important for efficient feed utilization.

Riboflavin Products—Natural fermentation products containing guaranteed potencies.

Special Liquid Curbay*—Molasses Distillers Condensed Solubles for poultry, hog, and dairy feeds.

Special Mixes—Combinations of methionine, antibiotics, and B complex vitamins.

Vitamin A (U.S.I. Permadry)—Has sealed-in Vitamin A with unusual biological availability.

Vitamin B_{12} Feed Supplements—Available in combination with antibiotics if desired.

Vitamin D_3—A stabilized form of Vitamin D_3 which will not lose potency during storage.

Vacatone* 40—Molasses Distillers Dried Solubles.

INORGANIC CHEMICALS

Anhydrous Ammonia—Commercial and refrigeration grades in tank cars or tank wagons only.

Caustic Soda—50% liquid in tank cars.

Chlorine, liquid—In tank cars.

Nitrogen Fertilizer Solutions—Aqueous solutions of ammonium nitrate and ammonia in all standard analyses.

Sodium, Metallic—Available in tank cars; convenient size bricks in steel barrels, pails; and cast solid in 55-gal. steel drums.

Sodium Peroxide—Dust-free granules shipped in drums.

Sulfuric Acid—All strengths from 60° Baumé to 40% Oleum. Also Electrolyte grade meeting Federal specifications. Tank cars or tank wagons only.

OTHER PRODUCTS

Ethylene, Refined and Commercial—Fuel gas; fruit ripening agent; organic syntheses; refrigerant

Curbay X*—Core binder; combustion aid; fermentation aid.

DL-Methionine (Pharm.)—Essential amino acid for pharmaceutical use.

N-Acetyl-DL-Methionine—A salt of Methionine giving increased solubility.

Riboflavin, U.S.P.

Urethan, U.S.P. (Ethyl Carbamate)—Soporific: starting point for chemical syntheses.

† Trademark. * Reg. U.S. Pat. Off.

U.S.I. INDUSTRIAL CHEMICALS CO.

Division of National Distillers Products Corporation

99 Park Ave., New York 16, N. Y. ***Branches in all Principal Cities.***

Chemicals

Antioxidants, con't.—Calcium Chloride

Antioxidants.....Antioxidant 425 offers greater protection against discoloration of rubber stocks. Technical Bulletin No. 840 contains complete and up-to-date information on the properties and behavior. 28 p.
205A American Cyanamid Co.

Antioxidants.....dbpc antioxidant is a light-colored solid alkylated phenol—proven highly effective in a variety of industries. Small concentration required for efficient protection makes dbpc economical. Complete data.
205B Kopers Co.

Aromatics, Coal Tar.....Used extensively in the paint and varnish industry where good solvency and controlled evaporation rate are required. Company furnishes complete specifications and samples on request.
205C Pennsylvania Indus. Com.

Barium Fluoride, Technical.....Company makes available an informative Data Sheet which offers pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-34181.
201q *Baker & Adamson

Bauxite.....68 p. illustrated booklet features data on various grades of bauxite & other Alcan chemicals, including chemical formulae, chemical & physical properties, suggested uses & packing information.
205D Aluminum Ltd. Sales.

Benthal.....Used in production of short and medium oil alkyd resins to control viscosity. Acts as molecular chain stopper. Improves resin durability, alkali and water resistance and film gloss. New Bulletin.
205E Monsanto Chem. Co.

Benzene Phosphorus Dichloride.....Mol. Wt. 179. Sp. Gr. 1.315 at 25°C. B.P. 224.6°C. at atmospheric pressure. A colorless liquid which fumes in air. Intermediate in organic synthesis. Makes available product sample.
205F Mallinckrodt Chem. Wks.

Benzene Phosphorus Oxydichloride..... Suggested uses: as an intermediate for synthesis of plasticizers and oil additives, and in general organic synthesis. Company announces the availability of product sample.
205G Victor Chem. Wks.

Benzene Phosphorus Thiodichloride..... Colorless liquid which fumes slightly in air. A reactive acid chloride which hydrolyzes very slowy in water but reacts with alcohols, phenols & amines. Product sample.
205H Victor Chem. Wks.

Benzenes, Chlorinated.....Valuable information on monochlorobenzene, o-dichlorobenzene, p-dichlorobenzene & 1, 2, 4-trichlorobenzene. Describes physical properties, uses, chemical reactions, toxicity, etc.
205I Dow Chem. Co.

Benzol.....Technical Bulletin 109-53, "Benzol Toluol Xylol," contains numerous photographs and descriptions of Texas plant & offers specifications on company line of aromatics. Available on request.
205J Cosden Petroleum Corp.

Biphenyl, Chlorinated.....Reports received from installations show that Monsanto Aroclor 1248 . . . a chlorinated biphenyl . . . is proving to be a superior heat-transfer medium. Technical Bulletin No. OP-115.
205K Monsanto Chem. Co.

Bleaching, Pulp.....Groundwood bleaching is used as example of a complex process in which many variables affect final results. Statistical methods applicable to this described in detail. Bulletin No. 31.
213kk *Buffalo Electro-Chem. Co.

Bleaching, Pulp.....“Becco Laboratory Procedures for Pulp Bleaching” provides a number of test procedures for preliminary evaluation of various peroxide pulp bleaching treatments. Request Bulletin No. 66.
213qq *Food Machy. & Chem.

Bleaching, Textile.....Makes available valuable literature reference entitled, “Analysis of Peracetic Acid Bleaching Solutions.” A detailed analytical procedure is given. Request No. 25.
213aa *Buffalo Electro-Chem. Co.

Bleaching, Textile.....Detailed literature offers a description of dye house practice using hydrogen peroxide for dye oxidation on the jig, packaged and continuous machines. Request Bulletin No. 38.
213ee *Buffalo Electro-Chem. Co.

Bleaching, Textile.....“Fluorescent Agents in Hydrogen Peroxide Bleaching of Knit Goods” discusses practical application of optical bleaching agents to peroxide bleaching of knit goods. Bulletin 53.
213hh *Buffalo Electro-Chem. Co.

Bleaching, Textile.....Makes available article reprint, “Knit-Goods Bleaching Range” . . . a description of high capacity continuous range for tension-free bleaching of knit goods. Bulletin No. 61.
213jj *Buffalo Electro-Chem. Co.

Borax, Anhydrous.....A product resulting from dehydration of the normal hydrated sodium tetraborate. Technical Bulletin covers theoretical composition, representative chemical analysis, uses, etc. Request No. 10.
205L Pacific Coast Borax Co.

Borax Glass.....Resembles ordinary glass in appearance—melts quietly without intumescence or frothing. Technical Bulletin covers composition (theoretical) representative chemical analysis, uses, etc. Request No. 2.
205M Pacific Coast Borax Co.

Boric Oxide.....Investigate the potential uses of Trona anhydrous boric acid. This boric oxide flake of highest purity has many possible commercial applications. Offers experimental sample upon request.
205N American Potash & Chem.

Boron Fluoride.....Its increasingly wide range of applications & cost-cutting production advantages—such as the ability to decrease sludge formation in many operations—make it a truly “all-round” catalyst. Full data.
2050 Baker & Adamson.

Boron Trifluoride, Ether Complex, Technical.....Presents informative Data Sheet which gives pertinent details concerning physical and chemical properties, suggested uses, containers, ec. No. DA-34711.
201r *Baker & Adamson

Borotherm.....A Brochure, which includes all available information on this new product, is issued as a guide for the numerous industries in which Borotherm may have applications as a fire-resistant material.
205P American Potash & Chem.

1,4-Butanediol.....A glycol with plus values in plasticizers, polyesters, polyurethanes. Almost colorless, odorless liquid, f.p. range 18-19.5° C, b.p. range 221-231° C. Product sample & technical information.
205Q General Aniline & Film Corp.

Butanol.....A strong solvent for many organic materials. Slow evaporation rate makes it particularly important as latent solvent for nitro-cellulose and resins. Descriptive literature upon request.
203-4b *U. S. Industrial Chem. Co.

n-Butyl Acetate.....Traditional medium evaporating solvent for lacquers as well as solvent for gums, fats, chlorinated rubber compounds, vinyls, polystyrene, etc. Properties & specifications. Bulletin N-36-1.
205R Celanese Corp. of America.

Butyl Acetate, Normal.....Most widely used medium-evaporating nitrocellulose solvent. Used in airplane dopes, artificial pearl, celluloid, cements, coated paper, lacquers, etc. Descriptive literature.
203-4f *U. S. Industrial Chem. Co.

n-Butyl Benzoate.....Offers description of: properties; shipping container contents; resin solubilities; applications as solvent, as extractant, & as intermediate for benzoate esters & alkyd resins. Bulletin F-8109.
205S Carbide & Carbon Chem.

Butyl Carbitol Acetate.....Solvent for numerous types of coating resins. Provides valuable information concerning physical properties, specifications, shipping, applications, etc. Technical Bulletin F-8644.
205T Carbide & Carbon Chem.

Butyl Oleate.....Witco butyl oleate is a stable, non-volatile, oily liquid, which will not solidify under normal winter conditions. Description & information on properties contained in Technical Service Bulletin E-8.
205U Witco Chem. Co.

Butyl Oleate Technical.....Butyl oleate is a primary plasticizer & solvent for natural & synthetic rubbers, & ethyl cellulose. Covers specifications, properties, solubility, etc. in Bulletin No. 07-20-0-2-54.
205V Harwick Standard Chem.

2-Butyne-1,4-Diol.....Reacts as a glycol & di-substituted acetylene. Chemical intermediate for solvents, plasticizers, plastics, etc. Announces availability of technical information, price schedules and samples.
205W General Aniline & Film Corp.

n-Butyraldehyde.....Eastman n-butyraldehyde—chemical intermediate . . . plastic intermediate . . . pharmaceutical intermediate . . . etc. Furnishes complete product information in addition to samples.
205X Eastman Chem. Products.

Calcium Acetate.....B&A purified calcium acetate is a white, free-flowing powder made from selected raw materials. Features extremely high purity plus superior physical characteristics. Sample and Data Sheet.
205Y General Chem. Div.

Calcium Boride.....Suggested uses: preparation of calcium boride parts by powder metallurgy techniques; as a boriding agent with metal powders; solid propellant mixtures; etc. Request Technical Bulletin.
205Z Metal Hydrides.

Calcium Carbonate.....Purecal SC is new coated ultrafine calcium carbonate. It disperses readily, & is entirely different from any other coated calcium carbonate on the market. Product samples & full information.
205AA Wyandotte Chem. Corp.

Calcium Carbonates, Precipitated..... Possibilities of cost reduction with minimum effect on physical properties by using Witcarbs V & P in filling vinyl chloride resins, suggested in Technical Service Bulletin W-2.
205BB Witco Chem. Co.

Calcium Carrageheen Sulfates.....Gelloids are thoroughly-refined, purified, standardized extracts of Irish Moss—eliminate danger of syneresis & hydrolysis in almost all formulations. Samples & information.
205CC Jacques Wolf & Co.

Calcium Chloride.....64 p. booklet offers informative data on Peladow—concentrated calcium chloride manufactured in pellet form. Includes properties, applications, advantages, handling, uses, etc.
205DD Dow Chem. Co.

Calcium Chloride.....Tables, graphs, applications in 64 p. Covers properties, use, and control of straight calcium chloride as brine medium in refrigeration and ice manufacturing systems. Bulletin No. 4.
205EE Solvay Process Div.

*From advt., this issue

Chemicals

Calcium Chloride, Anhydrous, Purified—

Chemicals, Synthetic Organic

Calcium Chloride, Anhydrous, Purified .....Makes available informative Data Sheet which gives pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-49211.
201v *Baker & Adamson

Calcium Gluconate USP Powder.....An ingredient in many pharmaceutical preparations. Calcium gluconate is used almost exclusively for treatment of calcium deficiency in humans & animals. Technical Information Sheet.
206A Mallinckrodt Chem. Wks.

Calcium Hydride.....Supplies important data on physical properties, chemical properties and applications, handling and storage, available forms and references on company line of calcium hydride. Bulletin 201-D.
206B Metal Hydrides.

Calcium Lignosulfonate ..... Presents Folder describing Toranil, a desugared calcium lignosulfonate. Covers physical & chemical characteristics, together with a list of present uses & suggested applications.
206C Lake States Yeast Corp.

Calcium Phosphide, Technical.....Company makes available an informative Data Sheet which gives pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-35341.
201y *Baker & Adamson

Calcium Stearate.....A fine, white to slightly yellow-white powder; free from grittiness; slight fatty acid odor. Technical Information Sheet provides details—complete description, uses, containers, etc.
206D Mallinckrodt Chem. Wks.

Capsules, Seamless.....Brochure covers new Gunnell capsules: what they are —how they are made—what sizes are available — the advantages — present capacity — availability of samples — packaging information—etc.
206E Gunnell Capsulations.

Carbon, Activated.....New reference details the uses, advantages & requirements of activated carbon as a catalyst or catalyst support in a wide variety of chemical processes. Request Technical Bulletin 20.
206F Barneby-Cheney Co.

Carbon, Activated.....“Solvent Recovery” contains 32 p. & 26 illustrations describing “Columbia” activated carbon solvent recovery system & tells how & where it can be used profitably. Request Booklet No. F-4410.
206G Carbide & Carbon Chem.

Carbon, Activated.....Pittsburgh Type BPL granular activated carbon designed to solve vapor phase adsorption problems more efficiently & at lower cost than any other similar material. Product samples & data.
206H Pittsburgh Coke & Chem.

Carbon Bisulfide.....Precise automatic control assures uniform high-quality, water-white carbon bisulfide for rayon, cellophane, cellulose sponges, rubber and rubber accelerators, etc. Product samples and prices.
206I Westvaco Chlor-Alkali Div.

Carbon Dioxide.....There's practically no end to the important jobs that CO_2 combined with Liquid Carbonic savvy—is doing. For examples of CO_2's amazingly diversified talents request “Applications Unlimited.”
206J Liquid Carbonic Corp.

Carbon Dosage.....By means of a Darcograph, you can plot relation between color adsorption & Carbon dosage—& read off dosage for residual color you need. Request Darcograph along with instructions on use.
206K Darco Dept.

Carbonates, Glycol.....Ethylene carbonate & propylene carbonate fully described in new reference. Data given on physical, chemical & physiological properties, shipping container contents, etc. Bulletin F-8307.
206L Carbide & Carbon Chem.

Carriers, Catalyst.....4 p. illustrated Folder concisely describes the advantages of Celite diatomite catalyst carriers—such as uniformity, microporosity, low density, thermal stability and great surface area.
206M Johns-Manville.

Carriers, Catalyst.....Alundum carriers prove highly successful in reactions such as those involved in manufacture of phthalic anhydride, maleic anhydride and oxidation of ethylene. Full details in Bulletin No. 7.
120-la *Norton Co.

Carriers, Dye.....Presents a Technical Bulletin discussing applications of the new Tanalon dye carriers, which are said to permit even dyeing of Dacron and its blends, without spotting, staining, or tarring.
206N Tanatex Corp.

Casein.....Illustrated, 12 p. furnishes pertinent information on casein—a thorough description, making casein (details “old” and “new” ways of producing casein), various grades, etc. Bulletin No. P-19-70-0-4-54.
206O Harwick Standard Chem.

Catalyst Supports.....Seventeen compositions . . . three degrees of porosity . . . symmetrical or Poly-surface pellets—your pick of catalyst supports. Furnishes technical literature with complete information.
206P Carborundum Co.

Catalysts.....Announces the availability of revised Product Data Sheets containing valuable information on powdered and pelleted vanadia oxidation catalysts and indicating silica gel for protective packaging.
206Q Davison Chem. Co.

Catalysts.....Presents a fully illustrated reference describing line of catalysts —tabletted, extruded, spherical, granular, powdered. Includes detailed information on the history and the numerous uses. 8 p.
206R Harshaw Chem. Co.

Catalysts.....You benefit with Girdler catalysts: custom design matches your needs; technical service helps you save; quality control assures uniformity; etc. For complete information, request Bulletin G-260.
206S Girdler Co.

Catalysts, Platinum Metals.....In many procedures, production control, purity of end product & cost of catalysis are brought to peak efficiency thru use of one of the platinum metals catalysts. Uses & forms.
206T Baker & Co.

Catalysts, Specialty.....Most active & stable catalysts made . . . for hydrogen production (by methane-steam reforming, by water-gas shift reaction) . . . for ammonia synthesis. Offers a valuable Booklet.
206U American Cyanamid Co.

Ceramic Materials.....Illustrated 20 p. lists ceramic materials available thru company. Includes body & glaze stains, underglaze & overglaze colors, porcelain enamel oxides, antimony oxide, nickel oxide, etc.
206V Harshaw Chem. Co.

Charts, Conversion.....Offers a Conversion Chart that does away with “computation headaches” in using phenolic resins to cast industrial parts and consumer items. Also technical data and production samples.
206W Marblette Corp.

*From advt., this issue

About New Technical Literature . . .

CE's second annual inventory of new and current technical literature available from manufacturers lists some 2,740 bulletins. Over 900 are on chemicals and materials, some 1,800 on equipment and acessories. It is by far the most comprehensive inventory of its kind and is a feature exclusive to CE. It is made up of all items published in CE's monthly Guide to Technical Literature in the issues of August 1954–July 1955 plus all literature items mentioned in the ads in this Inventory Issue.

Chelating Agents.....Offers valuable reprint, "Uses of Chelating & Sequestering Agents in Cosmetics," which contains a technical discussion on chelating agents, their structure & properties. Request your copy.
207A Glycol Products.

Chelating Agents.....Cheelox B-14 is the new, all-purpose chelating agent which is soluble and stable at all temperatures in neutral, acid and alkaline solutions. Makes available sample and technical information.
207B Antara Chem.

Chemicals.....64 p. Catalog offers technical information on many chemicals —trisodium phosphate (crystalline & monohydrate), chlorinated trisodium phosphate, disodium phosphate (anhydrous & crystalline), etc.
207C Blockson Chem. Co.

Chemicals.....Petrochemistry & biochemical operations form strong foundation for company's diversified output of several hundred important chemicals . . . for American industry. Details in Products Catalog.
207D Commercial Solvents Corp.

Chemicals.....Company announces the availability of their new complete catalogue describing such products as: acetoneglycerin, p-Acetylbenzoic acid, acetylcholine iodide, acetyl phosphate, aleuritic acid, etc.
207E Bois Labs.

Chemicals.....Announces the availability upon request of a revised catalog entitled, "Products of the Dow Chemical Company." Valuable reference furnishes an alphabetical listing of all Dow chemicals.
207F Dow Chem. Co.

Chemicals.....Company announces the availability of a publication, "Chemical Progress," which furnishes detailed information relating to the numerous different products in their line. Request Vol. 1 No. 1.
207G Carbide & Carbon Chem.

Chemicals.....Issues second edition of the Reilly Chemical Index. Contains essential information on over 100 organic compounds & includes 13 new chemicals. Listings are alphabetical and according to class. 8 p.
207H Reilly Tar & Chem. Corp.

Chemicals.....44 p. Catalog covers essential properties & uses on chemicals & allied chemical specialties. Includes industrial chemicals, Globrite cleaners, phosphating agents & strippers, fluxes, and many others.
207I Globe Chem. Co.

Chemicals.....44 p. Catalogue lists company's many products and briefly describes their chemical and physical properties. Covers detergents, wetting agents, emulsifiers, brighteners, dyeing assistants, etc.
207J Antara Chem.

Chemicals.....Mallinckrodt's flexible production facilities are geared to precision manufacture of chemicals from a few tons to carload lots. Brochure lists and describes company's chemicals and their uses.
207K Mallinckrodt Chem. Wks.

Chemicals.....With the addition of Fairfield Chemical, there are now six FMC Chemical Divisions. Detailed information on their activities contained in fully illustrated brochure, "Putting Ideas to Work."
207L Food Machy. & Chem. Corp.

Chemicals.....Issues new bulletin listing a selected group of synthetic organic & pharmaceutical chemicals. Structural formulas, descriptions & properties of 51 chemicals & pharmaceutical intermediates graphically shown.
207M National Aniline Div.

Chemicals.....Liberally illustrated, 28 p. reference graphically depicts in word and picture Diamond Alkali's family of chemical products for industry and agriculture. Request "The Story of the Chemicals You Live By."
207N Diamond Alkali Co.

Chemicals, Aluminum.....Offers a growing family of superior quality aluminum chemicals. Includes information on calcined alumina, activated alumina, alumina trihydrate, aluminum dross, aluminum powders, etc.
207O Reynolds Metals Co.

Chemicals, Barium.....Illustrated, 28 p. covers technical data on barium peroxide, barium oxide, barium pentahydrate, barium octahydrate, barium nitrate, barium carbonate, barium sulfide, etc. Bulletin 135M.
207P Westvaco Mineral Products.

Chemicals, Bulk.....Company announces the publication of their newest chemical supplement, "Bulk Chemicals." Valuable 14 p. price list contains over 100 reagent chemicals now available in bulk. Catalog No. 116-C.
207Q Fisher Chem. Mfg. Div.

Chemicals, Chromium.....68 p. reference covers the history—properties—uses of industrially important chromium chemicals. Includes sodium bichromate, sodium chromate, potassium bichromate, etc. Serial 52.
207R Mutual Chem. Div.

Chemicals, Fatty.....44 p. catalog, "Hydrofol Products," describes all standard ADM fatty chemicals: hydrogenated glycerides, hydrogenated fatty acids, saturated & unsaturated fatty alcohols, sperm oils, etc.
207S Archer-Daniels-Midland Co.

Chemicals, Industrial.....Description & typical applications for: alumina, calcined; alumina hydrate; aluminum sulfate; calcium hypochlorite; carbon tetrachloride; muriatic acid; nitric acid; caustic soda; etc.
207T Pennsylvania Salt Mfg. Co.

Chemicals, Industrial.....Information on Midland custom chemicals—Dextran resins alkyd resins, polyester styrene resins, polyester pyridine resins, wrinkle & hammer vehicles, etc. 6 p. Bulletin No. MID-10.
207U Midland Chem. Corp.

Chemicals, Industrial.....Illustrated, 16 p. covers: preformed catalysts, catalytic chemicals; electroplating salts, anodes & processes; fluorides; driers & metal soaps; pigments; etc. Request Booklet No. D-2794
207V Harshaw Chem. Co.

Chemicals, Leather.....16 p. Bulletin offers valuable data on Tanak MRX. Includes full description, requirements for use, properties (appearance, solubility, chemical reactions, etc.) and formulations.
207W American Cyanamid Co.

Chemicals for Metal Finishing..... Chemicals of interest to metal finishers include: citric, tartaric, gluconic & oxalic acids, & their salts. Request Technical Bulletin 61, "Chemicals for Metal Finishing."
207X Chas. Pfizer & Co.

Chemicals, Molybdenum.....Bulletin designed as an aid in finding sources of molybdenum compounds. Lists all molybdenum chemicals available in commercial or experimental quantities. Bulletin No. Ch-6.
207Y Climax Molybdenum Co.

Chemicals, Molybdenum.....Molybdenum compounds are widely used in production of catalysts, phosphomolybdic-phosphotungstic lake colors, molybdate chrome orange pigments, etc. Technical data, samples, prices.
207Z J. T. Baker Chem. Co.

Chemicals, Organic.....Bulletin designed to present in quick reference form a listing of typical industrial applications, & general properties of two reactive chemical products derived from redwood bark. No. C-28-5.
207AA Pacific Lumber Co.

Chemicals, Organic.....1954 catalog, "Organic Chemicals," offers full information on Daxad dispering agents & Darex copolymer latices—polyvinyl acetate emulsions—Everflex emulsions —plasticizers—etc.
207BB Dewey & Almy Chem. Co.

Chemicals, Organic.....Company makes available valuable and informative literature . . . a catalog which describes some 3500 Eastman organic chemicals. Request your copy of important reference—List No. 39.
207CC Distillation Products Ind.

Chemicals, Organic.....1955 edition of booklet, "Physical Properties of Synthetic Organic Chemicals," now available. Presents the latest data on more than 350 organic chemicals. 24 p. Booklet No. F-6136.
207DD Carbide & Carbon Chem.

Chemicals, Oxygen, Active.....Company makes available upon request a literature reference covering line of active oxygen chemicals. Becco peroxygen compounds are listed and described. Bulletin No. 1.
213t *Buffalo Electro-Chem. Co.

Chemicals, Peroxygen.....Modification methods based on the use of hydrogen peroxide, peracetic acid, and persulfates are described in detail. Also contains numerous literature references. Bulletin No. 27.
213ww *Buffalo Electro-Chem. Co.

Chemicals, Peroxygen.....Possiblities of using peroxygen chemicals for dehusking, seed disinfection, improvement of germination & modification of gluten in wheat grain discussed in informative Bulletin No. 33.
213xx *Buffalo Electro-Chem. Co.

Chemicals, Peroxygen.....Bleaching with some peroxygen chemicals—reprint of a paper on bleaching rayons, cotton, and wool with hydrogen peroxide, peracetic acid & ammonium persulfate. Request Bulletin No. 52.
213gg *Buffalo Electro-Chem. Co.

Chemicals, Photographic.....The leader in photographic chemicals—hypocarbonate—sulfite—and other photo pure chemicals. Company announces the availability upon request of a Folder which describes Maas line.
207EE A. R. Maas Chem. Co.

Chemicals, Process.....Valuable letter-size Folder keeps process chemical information handy. Contains availability charts of light metal compounds, heavy metal compounds, acids, etc. & full price schedules.
207FF J. T. Baker Chem. Co.

Chemicals, Research.....Issues a catalog of research chemicals of animal origin containing several new items. Includes data on Acylase, Tech.; 1-Adrenochrome, Crystallized; B.S.C. Lipids; etc. Catalog No. 7.
207GG Armour & Co.

Chemicals, Research.....Company announces the availability of a new Folder. This convenient reference describes 45 Victor research chemicals. Some of these interesting chemicals may offer possiblities to you.
207HH Victor Chem. Wks.

Chemicals for Resin Emulsions.....Includes data on: monomers; emulsion polymerization; emulsifiers; protective colloids; proportion of emulsifiers & protective colloids; physical modifiers; etc. Booklet No. F-8869.
207II Carbide & Carbon Chem.

Chemicals, Rubber.....31 p. covers uses, grades, properties, container information for tetramethylthiuram disulfide, tetraethylthiuram disulfide, selenium diethyldithiocarbamate, zinc dimethyldithiocarbamate, etc.
207JJ Sharples Chem.

Chemicals, Synthetic.....1955 Bulletin lists the properties, reactions and uses of company's line of synthetic organic chemicals. Covers antioxidants, styrene monomer, divinylbenzene polystyrene, etc.
207KK Koppers Co.

Chemicals, Synthetic Organic.....Offers 12 p. Catalog covering descriptions and suggested uses for line of alcohols, esters, chlorine compounds, amines, ureas, dithiocarbamic acid derivatives, etc. No. 53-2.
207LL Sharples Chem.

Chemicals

Chemicals, Synthetic Organic, con'td.—

Epoxidation with H_2O_2

Chemicals, Synthetic Organic.....157 p. compilation of applications & properties for Carbide's complete line of chemicals. Includes alcohols, esters, ketones, glycol-ethers, glycols, etc. Book No. F-4372D.
208A Carbide & Carbon Chem.

Chemicals, Textiles.....14 p. Booklet designed to furnish review of some of company's newer developments in textile chemicals — anti-static agents, chemicals for dyeing, surface-active chemicals, etc. No. F-8679A.
208B Carbide & Carbon Chem.

Chlorine.....Offers valuable technical bulletins: #7—"Liquid Chlorine"; #8—"Alkalies & Chlorine in Treatment of Municipal & Industrial Water"; #11—"Water Analysis"; #14—"Chlorine Bleach Solutions."
208C Solvay Process Div.

Chlorine, Liquid.....Presents new 72 p. technical and engineering service bulletin, "The Analysis of Liquid Chlorine and Bleach." Literature contains valuable data, tables, charts and indexes. Bulletin No. 12.
208D Solvay Process Div.

b-(o-Chloroaniline) Propionitrile..... Soluble in ethanol, ether, acetone, benzene and chloroform; insoluble in water, hexane. Data Sheet covers appearance and color, nature of impurities, chemical properties, etc.
208E Monsanto Chem. Co.

Chloromethanes.....Valuable data on diverse uses & physical & chemical properties of chloromethanes—methylene chloride, methyl chloride, chloroform, carbon tetrachloride—in new, comprehensive 28 p. reference.
208F Solvay Process Div.

b-Chloropropionitrile.....Technical data Sheet offers pertinent information: appearance and color; nature of impurities; stability; solubility in common solvents; toxicity; chemical properties; uses; etc.
208G Monsanto Chem. Co.

Chlorpicrin.....Features a booklet describing in detail why and how Larvacide (Chlorpicrin) has been used for thirty years in grain and warehouse fumigation to reduce losses from insects and rodents.
208H Larvacide Products.

Chromium Fluoride, Technical.....An especially dry, free-flowing product, offering superior physical characteristics that assure better process performance. Furnishes a product sample and descriptive Data Sheet.
208I General Chem. Div.

Chromium Nitrate, Crystal, Purified .....Makes available an informative Data Sheet which gives pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-35801.
201aa *Baker & Adamson

Cleaners, Industrial.....Presents descriptive literature covering Petroclean D-25 . . . a new concentrated, emulsifying-type, industrial liquid cleaner for the purging of fat, oil and grease. Request 4 p. booklet.
208J Whisticlean Corp.

Cobalt Compounds.....Valuable information on cobalt as a nutritional corrective in animals—a compilation of articles bearing on the importance of cobalt in relation to nutrition. Illustrated Booklet D 1995.
208K Harshaw Chem. Co.

Cobalt Hydrate.....Witco manufactures cobalt hydrate as a highly reactive source of cobalt for the synthesis of cobalt-containing compounds. Includes typical analysis in Technical Service Bulletin No. P-19.
208L Witco Chem. Co.

*From advt., this issue

Cold Casting Compounds, Liquid Polymer .....Several trial formulations and properties of cold casting compounds based on "Thiokol" liquid polymer LP-2 are described in 4 p. Technical Service Bulletin 115.
208M Thiokol Chem. Corp.

Color Paste Concentrates.....Makes available a reference describing "4000" series color paste concentrates . . . for coloring epoxy, thiokol, polyurethane isocyanate resin. Request Technical Bulletin No. 130.
208N Claremont Pigment Dispersion.

Copper Naphthenate.....Witco 8% copper naphthenate is a dark green viscous liquid. It is a highly effective, economical fungicide & preservative for all cellulosic materials. Data in Technical Service Bulletin P-15.
208O Witco Chem. Co.

Copper Sulphate Crystals.....New improved industrial crystals copper sulphate is readily adaptable to all types of solution equipment. Samples, specifications & detailed information made available upon request.
208P Tennessee Corp.

Crotonaldehyde.....Eastman crotonaldehyde—denaturant . . . chemical intermediate . . . specialty solvent . . . etc. Company makes available upon request complete product information in addition to samples.
208Q Eastman Chem. Products.

Crystals, Optical, Synthetic.....Used for infra-red & ultra-violet optics, piezoelectric effects & short wave radiation detection. 36 p. describes sodium chloride, potassium bromide, potassium chloride, etc.
208R Harshaw Chem. Co.

Cuprous Chloride, Technical.....Company makes available an informative Data Sheet which covers pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-36571.
201ii *Baker & Adamson.

Curing Agents, Amine.....Wide selection enables you to select the preferred "pot life" for your epoxy resin application . . . from a few minutes to several hours. Data in Technical Information Report F-8665.
208S Carbide & Carbon Chem.

Cyanoacetamide.....Now used in syntheses of vitamins & barbiturates. Suggested as an intermediate for special resins, substituted piperidines & pyridones, new pharmaceuticals, etc. Offers Technical Data Bulletin.
208T Kay-Fries Chem.

Cyanoethylated Cotton, Dyeing.....Company makes available an 18 p. fully illustrated booklet entitled, "A Preliminary Study of the Dyeing of Cyanoethylated Cotton." Dyestuff Technical Bulletin No. 837.
208U American Cyanamid Co.

Cyanuric Chloride.....New plant facilities mean large domestic source of pure cyanuric chloride at a new low price. Offers "Chemistry of Cyanuric Chloride," "Cyanuric Chloride Derivatives" & product sample.
208V American Cyanamid Co.

Cyclohexanol.....'Hexalin" cyclohexanol is a good solvent for several classes of dyes including basic, chrome, some acid & the majority of acetate rayon dyes. Describes properties, specifications, uses, etc.
208W E. I. du Pont de Nemours.

Cyclopentane Derivatives.....Essential and detailed information on company's line of cyclopentane derivatives . . . for the pharmaceutical, perfume, and allied industries. Also furnishes samples and quotations.
208X Arapahoe Chem.

Defoamers.....Years of research & experience with a variety of foam problems, care in manufacture, & wide selection of raw materials for the job, help produce defoamers that go farther. Offers full information.
208Y Swift & Co.

Defoamers.....New defoaming agent, Defoamer PC-1244, is particularly effective in systems where the continuous phase is organic in nature or in single-phase organic systems. Technical Bulletin No. 0-76.
208Z Monsanto Chem. Co.

Defoamers.....For more efficient foam control. Versatile defoamers save space now wasted on foam, cut the processing time, eliminate waste & fire hazard of overflowing foam, etc. Offers complete data & samples.
208AA Dow Corning Corp.

Detergents.....Whether your cleaning problem is windows, walls, floors, dishes, autos, etc. . . . you'll get better results with Sulframin HD Beads—Ultra's all-purpose detergent. Technical Data Sheet, sample & prices.
208BB Ultra Chem. Wks.

Detergents.....World's largest producer of synthetic detergent raw materials provides complete data on line: product description; specifications and tests; properties; uses and applications; etc. Illustrated, 28 p.
208CC Oronite Chem. Co.

o-Dianisidine.....Company makes available upon request a free sample of o-Dianisidine—a gray to pinkish gray solid readily soluble in dilute hydrochloric acid. It may contain up to 0.5% ash as an impurity.
208DD E. I. du Pont de Nemours.

trans-1,2-Dibenzoylethylene.....Contains valuable information on physical properties, chemical properties, suggested uses, physiological action, etc. Includes lengthy bibliography. Technical Bulletin 1-3.
208EE National Aniline Div.

Di-tert-Butyl-p-Cresol.....Toxicological information, descriptions of chemical reactions, etc. on product proven effective as antioxidant for fatty foods & hydrocarbon materials. Technical Bulletin No. C-4-115.
208FF Koppers Co.

Di-tert-Butyl-p-Cresol.....Information in non-technical language on use of "dbpc" antioxidant in food, plastics, rubber, insulating oils, petroleum fuels, lubricants and waxes, etc. Illustrated Bulletin No. C-4-197.
208GG Koppers Co.

Dibutyl Fumarate.....A reactive resin & chemical intermediate—available in semi-commercial quantities. Covers typical physical properties, polymerization reactions, toxicity, etc. Technical Bulletin ODB-54-18.
208HH Monsanto Chem. Co.

2,6-Di-tert-Butylphenol.....This material is now ready for testing in your products—as an antioxidant for petroleum products, plastics, rubber & both animal & vegetable fats & oils. Request Fact Sheet & product sample.
208II Ethyl Corp.

Dibutyl Phthalate.....Witco dibutyl phthalate is a stable, colorless, and odorless ester . . . of outstanding value as a plasticizer for nitrocellulose lacquers. For details, request Technical Service Report E-4.
208JJ Witco Chem. Co.

Dicalcium Phosphate.....Quality and uniformity assured by chemical control from mines to finished products . . . service assured by large-scale production. Company offers Data Sheet with complete information.
208KK American Agricultural Chem.

p-Dichlorobenzene.....Your packaging and selling jobs are easier with Paradi's exclusive seven sizes. Makes available a descriptive folder containing information on handling and use. Request copy of Bulletin 454.
208LL Hooker Electrochem. Co.

1,4-Dichlorobutane.....Now available in tank-car quantities, 1,4-dichlorobutane makes possible profitable commercial development of many organic syntheses. For full details, request literature and information.
208MM E. I. du Pont de Nemours.

1, 2-Dichloroethylene.....Announces the availability of a Technical Data Report covering the physical and chemical properties and various reactions of 1, 2-dichloroethylene (mixed cis and trans isomers).
209A Monsanto Chem. Co.

Dichloromaleic Anhydride.....Potential applications include: curing agent for epoxy resins; preparation of resinous plasticizers; modifying acid in polyesters; intermediate; etc. Samples & Technical Data Sheet.
209B Wesvaco Chlor-Alkali Div.

Diethyl Malonate.....34 p. Technical Data Bulletin describes this useful intermediate in general organic synthesis. Covers data on properties, specifications, packaging, reactions with alkoxy compounds, etc.
209C Kay-Fries Chem.

Diethyl Oxalate.....Used in radio tube cathode coating, to prevent rapid drying of nitrocellulose printing inks, etc. Also in organic synthesis. For complete information, request product literature.
203-4j *U. S. Industrial Chem. Co.

Diethylene Glycol.....Company issues a Technical Information Bulletin on diethylene glycol & triethylene glycol. Both are used to plasticize composition cork. For complete details request No. F-8085.
209D Carbide & Carbon Chem.

Diethylene Glycol Monobutyl Ether..... Valuable data on butyl Carbitol—physical properties, specifications, shipping data, general solvent properties, constant-boiling mixtures, etc. Bulletin No. F-8636.
209E Carbide & Carbon Chem.

Diethylene Glycol Monoethyl Ether Acetate.....Booklet describes Carbitol acetate—discusses the uses of this glycol-ether, as well as its physical & chemical properties, specifications, etc. Bulletin No. F-4811A.
209F Carbide & Carbon Chem.

Diethylene Triamine.....Make new & better products with diethylene triamine—synthetic rubber...surface coatings...textile specialties...metal and metal working...etc. Reference No. F-8163.
209G Carbide & Carbon Chem.

Di-2-Ethylhexyl Adipate.....A colorless, high-boiling, liquid linear ester of outstanding value as a primary plasticizer for vinyl resins. Furnishes a complete description in Technical Service Bulletin E-3.
209H Witco Chem. Co.

Dihydroxy Diphenyl Sulfone.....Shows promise as an ingredient in production of heat-resistant epoxy and phenolic resins. Covers properties, specifications, chemical reactions, uses, etc. Bulletin No. 0-118.
209I Monsanto Chem. Co.

Diisocyanates.....Product data given on Todi & Dadi, two new isocyanates now available in semi-commercial quantities. Includes general properties, special properties, stability, uses, toxicity, a bibliography, etc.
209J Carwin Co.

Diisodecyl Adipate.....Announces a Bulletin which describes the properties & performances of diisodecyl adipate, a low volatile, low temperature plasticizer for polyvinyl chloride resins. No. O-113.
209K Monsanto Chem. Co.

2,6-Diisopropylphenol.....Covers o-Alkyl phenols—valuable new raw materials for the synthesis of synthetic resins . . . plasticizers . . . surface-active agents. Technical information (Fact Sheet) & product sample.
209L Ethyl Corp.

Dimethylamino Propylamine & Diethylamino Propylamine.....Clear, colorless mobile liquids—completely soluble in water, benzene, heptane & many other organic compounds. Complete data in reference No. F-8527.
209M Carbide & Carbon Chem.

Dimethylhydrazine.....A colorless, flammable liquid with an ammonia-like odor, is readily soluble in water, alcohol, ether and aliphatic hydrocarbons. Information in Technical Data Sheet and price schedule.
209N Westvaco Chlor-Alkali Div.

Dimethyl Itaconate & Dibutyl Itaconate.....These diesters copolymerize readily with many other monomers, including acrylonitrile, the methacrylates, vinyl chloride, vinylidene chloride, etc. Samples & technical data.
209O Chas. Pfizer & Co.

Dimethyl Sulfoxide.....A new solvent with numerous unusual advantages. Clear, water-white, very hygroscopic and completely water soluble liquid ...now availabe in pilot plant quantities. Complete information.
209P Stepan Chem. Co.

Dioctyl Phthalate.....Produces a truly high quality dioctyl phthalate whose combination of low color, low odor, low acidity, high heat stability & high ester content is unsurpassed. Offers specifications & samples.
209Q Eastman Chem. Products.

Dioctyl Phthalate.....Witco dioctyl phthalate is a colorless high boiling ester of outstanding value as a primary plasticizer for vinyl resins. Descriptions, physical properties, etc., in Technical Service Bulletin E-6.
209R Witco Chem. Co.

N,N'-Diphenyl-p-Phenylenediamine..... Explains the use of N,N'-diphenyl-p-phenylenediamine as an effective poultry feed additive for preserving vitamin E & preventing encephalomalacia. Bulletin No. GC-22.
209S B. F. Goodrich Co.

Dispersants.....Describes Marasperse—the low cost, highly effective dispersant. Completely soluble in water; non-hygroscopic, non-fermenting, non-caking, free-flowing powder. Information in File No. W-140.
209T Marathon Corp.

Dispersing Agents.....Daxad dispersing agents put a negative charge on individual particles in aqueous media. The particles repel each other—you get a stable dispersion. Complete data on Daxads in new Brochure.
209U Dewey & Almy Chem. Co.

Dispersing Agents.....Darvan #1 and #2—polymerized organic salts of sulfonic acids (alkyl-aryl type)...they are true dispersing agents for water systems. Makes available data and product sample upon request.
209V R. T. Vanderbilt Co.

Dispersion Agents.....The versatile Lomar series of dispersion agents are continuing to improve manufacturing processes and finished products in many diverse fields. Makes available test sample and complete Data Sheet.
209W Jacques Wolf & Co.

Dispersions.....Issues new illustrated booklet discussing use of "dag" colloidal graphite as a parting compound. Specific "dag" dispersions for industrial uses & techniques of application. Bulletin No. 427.
209X Acheson Colloids Co.

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Dispersions, Colloidal.....Company presents a new, completely illustrated reference describing how colloidal dispersions have been used successfully for dry-film lubrication. Request 4 p. Bulletin No. 438.
209Y Acheson Colloids Co.

Dispersions, Fluorocarbon Polymer..... 20 p. covers application techniques for Kel-F fluorocarbon polymer dispersions on metallic and non-metallic surfaces — spraying, spread coating, dip and flow coating, baking.
209Z M. W. Kellogg Co.

Dodecenylsuccinic Anhydride.....6 p. covers physical properties, chemical properties, suggested uses, hazards, physiological action & availability. Also contains graphs and bibliography. Technical Bulletin No. I-8.
209AA National Aniline Div.

Driers.....For paint, varnish, printing ink and allied industries. Fully illustrated booklet describes company line of driers, the modern plant in which they are produced, and the new research laboratories. 36 p.
209BB Harshaw Chem. Co.

Driers.....Illustrated, 24 p. covers chemical properties of driers (cobalt, lead, manganese, zinc, calcium, iron, copper) & physical properties (naphthenic driers, octoic driers, etc.). Bulletin No. 54-2.
209CC Witco Chem. Co.

Dyeing Synthetic Fibers.....Offers valuable reference, "Dyeing Synthetic Fibers"—a comprehensive, detailed analysis of the methods & materials available for dyeing synthetic fibers. 60 p. Brochure No. GS-66.
209DD General Dyestuff Co.

Eicosane, Technical.....Provides valuable information on Atlantic Technical Eicosane—a water-white, hydrocarbon mixture that is readily chlorinated to present to you a product of outstanding stability.
209EE Atlantic Refining Co.

Emulsifiers.....Valuable data on use of Atlas emulsifiers in "A Guide to Formulation of Industrial Emulsions with Atlas Surfactants." Booklet contains over 60 typical formulas utilizing Atlas products.
209FF Atlas Powder Co.

Emulsifiers.....20 p. Technical Booklet offers data on the use of Dresinate as an emulsifier, detergent, & dispersant in soluble oils & cleaning compounds. Supplied in liquid, dry, & paste form. Illustrated.
209GG Hercules Powder Co.

Emulsions.....Details on Neiradex No. 1 —an emulsion that is rinsed into Dynel industrial clothing during routine laundering to make the garments splash-resistant to acids and alkalies. Illustrated, 4 p.
209HH Neirad Industries.

Emulsions, Asphalt.....Chemically inert asphalt emulsions are compatible hot or cold, wet or dry, with most resins, latices, fine fillers, fibers, aggregates, glues & other elastomers. Samples & details.
209II American Bitumuls & Asphalt.

Emulsions, Rubber, Chlorinated.....Water-thinnable emulsion of chlorinated rubber offers to the protective coatings industry a versatile vehicle for formulating a wide range of durable coatings. Bulletin 101.
209JJ Alfred Hague & Co.

Epichlorhydrin.....Highly reactive chemical for making epoxy resins, pharmaceuticals, surface-active agents, ion-exchange resins, plasticizers, stabilizers, dyestuffs, etc. Offers information, samples, prices.
209KK Carbide & Carbon Chem.

Expodiation with H_2O_2.....Literature and data on epoxidation technique for natural fats, oils and derivatives. New method increases epoxy content; lowers by-products formation; eliminates performing peracid; etc.
209LL E. I. du Pont de Nemours.

Chemicals

Epoxidation-Hydroxylation Reactions—Formaldehyde

Epoxidation-Hydroxylation Reactions . . . . . Epoxidation & hydroxylation reactions with hydrogen peroxide & peracetic acid. General review gives typical procedures & suggested applications. Bulletin No. 16.
213tt *Buffalo Electro-Chem. Co.

Epoxidation-Hydroxylation Reactions . . . . . Makes available a reprint of an article which discusses epoxidation reactions and the importance of the reaction products for the plastics industry. Request Bulletin 58.
213nd *Buffalo Electro-Chem. Co.

Esters . . . . . Furnishes descriptive booklet, "Esters by Glyco," containing application & property information on a wide range of products. Data on monoglycerides, glycol and polyglycol esters, etc.
210A Glyco Products Co.

Esters . . . . . Makes available a 40 p. reference describing company's line of esters for lacquer solvents—photographic films—plastics—synthetic dyes—pharmaceuticals—perfumes—etc. Request Book No. F-4766.
210B Carbide & Carbon Chem.

Esters of p-Hydroxybenzoic Acid . . . . . Colorless & practically odorless neutral esters (Parasepts) combine properties of effectiveness, stability & safety—& have long served in wide variety of products. Data & samples.
210C Heyden Chem. Corp.

Ethanolamines . . . . . Mono—di—and tri—ethanolamines, scheduled for production, will be capable of meeting the purity demands of the tremendous number of ethanolamine users. Informative technical literature.
210D Allied Chem. & Dye Corp.

Ether Anhydrous AR . . . . . Perfectly clear colorless liquid; clean characteristic odor of ethyl ether, free from foreign odor. Purest diethyl ether commercially available. Details in Technical Information Sheet.
210E Mallinckrodt Chem. Wks.

Ethyl Acetate . . . . . Two solvents, ethyl acetate and isopropyl acetate, are low-boiling or fast evaporating esters that have served the lacquer industry for many years. Details in reference, "Esters." No. F-4766.
210F Carbide & Carbon Chem. Co.

Ethyl Acetate . . . . . Excellent solvent for cellulose esters, resins, etc. Also used in acetic acid extraction, candy glaze, cleaners, denatured alcohols, flavorings, perfumes, rayon. Offers descriptive literature.
203-4g *U. S. Industrial Chem. Co.

Ethyl Acetate . . . . . New 12 p. technical booklet contains information on uses of ethyl acetate & its physical & physiological properties, specifications, shipping data, constant-boiling mixtures. Booklet F-8140.
210G Carbide & Carbon Chem.

Ethyl Benzene . . . . . Information provided on physical, chemical and physiological properties; specifications; shipping container contents; suggested applications; typical reactions; etc. 4 p. Technical Bulletin F-8596A.
210H Carbide & Carbon Chem.

Ethyl Bromide . . . . . One of Dow's numerous intermediates—helps make chemical synthesis easier & is usefully applied from laboratory to full-scale production. Offers detailed information & an experimental sample.
210I Dow Chem. Co.

Ethyl Bromide . . . . . Michigan Chemical's ethyl bromide often is an economical intermediate to employ for the introduction of the ethyl radical. For complete production information, request descriptive Catalog.
210J Michigan Chem. Corp.

Ethyl Carbonate 90% . . . . . A nearly-neutral, mild odor, medium evaporating nitrocellulose solvent . . . used in lacquers, radio tubes, etc. For complete details of Diatol, request product literature.
203-4k *U. S. Industrial Chem. Co.

Ethyl Ether . . . . . Applications: widely used in manufacture of smokeless powder and in extracting fats; an essential laboratory reagent; chemical synthesis. Furnishes descriptive literature on request.
203-4h *U. S. Industrial Chem. Co

Ethyl Mercaptan Purified . . . . . Warning agent for numerous purposes, particularly as an additive in natural and liquefied fuel gases. Full data on clear colorless, volatile liquid in Technical Information Sheet.
210K Mallinckrodt Chem. Wks.

Ethyl Silicate . . . . . 20 p. illustrated folder contains general background information on the use of ethyl silicate in precision casting. Includes complete physical properties and specifications. Booklet No. F-8265.
210L Carbide & Carbon Chem.

Ethyl Sodium Oxalacetate . . . . . Applications; as a highly reactive intermediate in production of ore-refining flotation agents and other organic syntheses. Request descriptive product literature.
203-4s *U. S. Industrial Chem. Co.

Ethyl Vanillin . . . . . Ethavan (ethyl vanillin) & Vanillin can pep up flavor of inexpensive hard butter coatings & smooth out rich, full body of cocoa butter coatings. Ethavan-Vanillin Taste Test Kit upon request.
210M Monsanto Chem. Co.

Ethylene Cyanohydrin . . . . . Feature high quality—quantity needed (when needed)—technical assistance to help evaluate ethylene cyanohydrin for product or process. Data on properties, reactions, shipping, handling, etc.
210N Carbide & Carbon Chem.

Ethylene Diamine . . . . . Commercial quantities of high concentration ethylene diamine are available from Morgantown, W. Va. plant. Shipments made in tank cars, tank trucks, returnable tin-lined drums. Data & samples.
210O Olin Mathieson Chem. Corp.

Ethylene Glycol Monobutyl Ether . . . . . Solvent in: nitrocellulose lacquers—to improve blush resistance & promote good flow out & gloss; baking enamels—as a viscosity-reducing agent; etc. Bulletin F-7862.
210P Carbide & Carbon Chem.

Ethylene bis (Glycolic Acid) . . . . . Of interest in preparation of polyamides, polyesters, plasticizers, synthetic lubricants, adhesives, etc. Complete property data included in New Product Information Bulletin.
210Q E. I. du Pont de Nemours.

Ethylene Oxide . . . . . Used as a starting material in manufacture of acrylonitrile & nonionic surface active agents, & as a sterilizing agent & fumigant. Samples for your preliminary investigation available.
210R Jefferson Chem. Co.

Ethylene Oxide . . . . . Carbide offers you consistent, high-quality material in the quantity you need—when you need it. Request valuable reference, "Operating Procedures for Handling Ethylene Oxide," Form 7618.
210S Carbide & Carbon Chem.

Ethylene Oxide . . . . . Prepare non-ionic detergents by using high purity Nitrogen Division ethylene oxide. Data & a bibliography of pertinent literature in "The Manufacture of Non-Ionic Detergents from Ethylene Oxide."
210T Nitrogen Div., AC&D.

Extenders . . . . . Halowax product 4004 is especially useful as low-cost extender in plasticizing systems for vinyl resins. Description, properties, typical formulations using product 4004, etc. Technical Bulletin No. 1.
210U Bakelite Co.

Extenders & Fillers . . . . . Announces Furafil 100 . . . a dependable filler & extender for phenolic resin molding powders & glues, a filler for rubber compositions, an anticaking agent, etc. Sample & Technical Bulletin.
210V Quaker Oats Co.

Ferric Nitrate, Crystal, Technical . . . . . Makes available an informative Data Sheet which gives pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-37441.
201jj *Baker & Adamson

Ferrous Sulfate Exsiccated USP Powder . . . . . An odorless, fine, grayish-white powder containing the equivalent of 1¼ molecules of water. Offers a Technical Information Sheet furnishing complete details.
210W Mallinckrodt Chem. Wks.

Fillers . . . . . Furafil 100 is a filler for phenolic resin molding compounds & molded rubber articles & an anticaking agent & carrier in insecticide & fungicide compositions. Bulletin 133 & product samples on request.
210X Quaker Oats Co.

Fillers . . . . . Witcarb fillers for polyester resins—reduce overall cost of reinforced plastic parts by extending resin 40-50% without detracting from final cured properties. Request Technical Service Bulletin W-1.
210Y Witco Chem. Co.

Film, Polyester . . . . . Technical Reports (TR-1, 2) on Mylar's polyester film—one covering film's physical, chemical & electrical properties, & one on adhesives developed for bonding Mylar to other materials.
210Z E. I. du Pont de Nemours.

Flatting Agents & Pigment Extenders . . . . . Covers general advantages of Celite diatomite products & gives valuable data on use of Celite in nine basic types of finishes—with one or more typical formulations for each.
210AA Johns-Manville.

Flavors . . . . . 20 p. illustrated Flavor Catalog fully describes more than 30 separate flavor groups embracing a total of over 700 different flavors. Distribution limited to those who buy in wholesale quantities.
210BB Fritzsche Bros.

Flavors . . . . . 72 p. "double" Brochure describes the D&O complementary lines of Spisoresin and Spisorama seasonings. Valuable reference includes information concerning manufacture, application, advantages, etc.
210CC Dodge & Olcott.

Fluid, Hydraulic . . . . . 20 p. booklet includes a step-by-step check list for converting a system to Pydraul F-9 (fire-resistant industrial hydraulic fluid) as well as data on its properties & past performance.
210DD Monsanto Chem. Co.

Fluxes, Rosin, Insulating . . . . . Test-proven to be the best rosin flux for vhf., uhf. and microwave applications, as well as general types of electrical work. Covers line of fluxes, rosin core solder, fluxcote, etc.
210EE London Chem. Co.

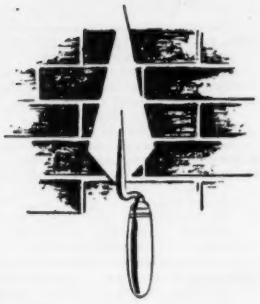
Formaldehyde . . . . . U. F. Concentrate—85 is highest concentration of liquid formaldehyde commercially available . . . 59% formaldehyde and 26% urea in a water solution. Request full details and valuable Folder.
210FF Nitrogen Div. AC&D.

Formaldehyde . . . . . Low in formic acid & iron, Mathieson formaldehyde meets the most rigid specifications for purity & uniformity. Available in: 37% inhibited; 37% low methanol; 45% low methanol. Full details.
210GG Olin Mathieson Chem. Corp.

Formaldehyde . . . . . Trioxane—a crystalline form of formaldehyde—now available in continuing commercial quantities, for the first time. Physical properties, specifications, uses, etc., in Product Bulletin No. N-31-2.
210HH Celanese Corp. of America.

*From advt., this issue

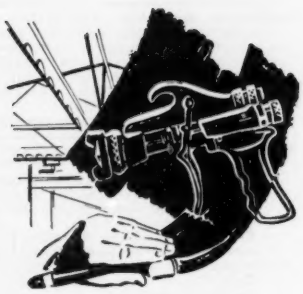
PLANT WIDE PROTECTION from CORROSION



FOR INDUSTRIAL FLOORS, VESSEL INTERIORS, STACKS and OTHER MASONRY STRUCTURES

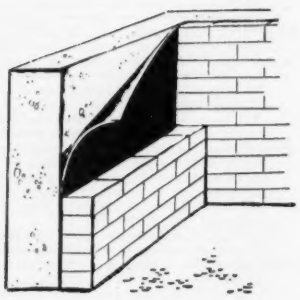
Atlas Corrosion Proof Cements tightly bond acid brick to assure strong, long lasting structures.

In addition to outstanding corrosion resistance, Atlas cements exhibit the desirable physical properties of high adhesion, high tensile strength and low shrinkage.



FOR EQUIPMENT EXTERIOR, WALL, BEAM, and CEILING PROTECTION

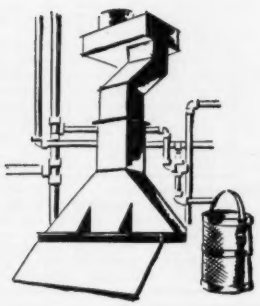
Atlas Protective Coatings protect valuable equipment and structures from fumes and splash of corrosives. A wide variety of coatings assures you of the correct coating to fufill your specific needs.



FOR PROCESS VESSELS, TANKS, REACTORS, and LARGE FUME EXHAUST DUCT SYSTEMS

Atlas offers a number of Standard Corrosion Proof Linings. Each lining is resistant to a broad range of chemical agents; each is tough and resilient for long-term service.

Atlas maintains complete facilities for installing the linings properly.



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Atlas Rigid Plastic Structures, Pipe and Fittings are designed to contain, convey and exhaust corrosives.

Fabricated from a variety of materials depending on the requirements of the customer, the installations are corrosion resistant throughout . . . require no coatings or other protective measures during their entire life of service.

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If you have a problem dealing with corrosion, let Atlas help you find a solution with sound, time-tested recommendations.

Write for your copy of Bulletin MCC-3 on Atlas products and services.

ATLAS MINERAL PRODUCTS COMPANY
MERTZTOWN, PENNSYLVANIA

Chemicals

Formaldehyde in Alcohols—Indulin

Formaldehyde in Alcohols.....Celanese Formcels are relatively water-free formaldehyde solutions in a variety of alcohols offered to meet individual requirements. Full details in New Product Bulletin N-28-4A.
212A Celanese Corp. of America.

Froth Flotation.....28 p. reference includes sections on: flotation—general discussion; types of flotation reagents; the history of flotation; promotors & modifiers; function of froth in flotation; etc.
212B American Cyanamid Co.

Fullers Earth.....Makes available a reference on Permagel, Attasorb and Attasol as thickening, gelling and suspending agents for organic or aqueous system. Request your copy of Technical Data Sheet SD-29.
212C Minerals & Chem. Corp.

Fumaryl Chloride.....6 p. Folder contains a list of the physical properties and a brief discussion of important chemical reactions in which fumaryl chloride takes part. Request Technical Bulletin No. I-7.
212D National Aniline Div.

Fumigants.....Carboxide fumigant—the efficient & safer fumigant for insect control in passenger equipment. Covers features: safety record, 100% effectiveness, economy, easy application. Request Booklet F-6950.
212E Carbide & Carbon Chem.

Fumigants, Grain & Mill.....Effective in fighting insect losses in grain elevators, farm storage, warehouses, etc. Describes active ingredients, properties, dosages, exposure time, flammability, in Bulletin 806 R.
212F Westvaco Chlor-Alkali Div.

Furfural.....Rely on furfural for performance . . . uniform purity . . . low cost . . . unfailing availability. Offers test sample & descriptive Bulletin (204) covering its unusual properties and numerous uses.
212G Quaker Oats Co.

Gelatin.....A high protein, low-calorie food...AA Quality Keystone Gelatin provides a stabilizer and binding colloid for numerous meat, bakery, and confectionery products. Makes available complete details.
212H American Agricultural Chem.

Gelling Agents.....Sodium Stearate T-1 & Aluminum Stearate #22 have found new application in rapidly growing field of vinyl plastisols and organosols. Valuable data in Technical Service Bulletin G-5.
212I Witco Chem. Co.

Glycerine.....Numerous properties make it preferable for toilet preparation. Safe for use in pharmaceuticals. Offers complete information in detailed booklet, "Why Glycerine for Drugs and Cosmetics?"
212J Glycerine Producers' Assoc.

Glycerine.....Offers valuable booklets including: "Glycerine Alkyds Tailored to Need" (20 p.); reference on glycerine standards & specifications (12 p.); booklet covering properties & applications (16 p.).
212K Glycerine Producers' Assoc.

Glycerine.....Offers valuable booklets including "Glycerine—Preferred for Product Conditioning," which outlines properties that make glycerine preferable in conditioning toilet goods and pharmaceuticals.
212L Glycerine Producers' Assoc.

Glycerol Mono-Oleate, Distilled..... Provides a Technical Report which describes the characteristics & use of distilled glycerol mono-oleate as a dispersant for odorless thinner — alkyd resin systems.
212M Distillation Product Ind.

Glycol Dibenzoate Esters.....Announces a new series of glycol dibenzoate esters, each with special properties that may improve your product or processing. Offers experimental samples & technical information.
212N Tennessee Products & Chem.

Glycols.....Strict production control assures consistent high quality. Complete Data Sheets provide valuable information on Mathieson glycols—ethylene glycol, diethylene glycol, triethylene glycol, etc.
212O Olin Mathieson Chem. Corp.

Glycols.....High purity ethylene glycols are extremely versatile with a wide range of applications. Actual shipping analyses show low iron, low chlorides, low acidity, low water. Request product sample & data.
212P Nitrogen Div., AC&D.

Glycols.....Illustrated, 60 p. describes uses & suggested applications for glycols. Tabular data includes properties, shipping information, specifications, test methods & constant-boiling mixtures. Book F-4763.
212Q Carbide & Carbon Chem.

Glyoxal.....Since Carbide first made glyoxal, this versatile dialdehyde has found important uses in nearly every industry. For complete information, request booklet, "Glyoxal & Pyruvic Aldehyde," No. F-7607.
212R Carbide & Carbon Chem.

Greases.....Mo-Silicone Vacuum Grease combines unique chemical inertness & excellent temperature-viscosity relationship of silicone liquids with lubricating qualities of molybdenum disulfide. Bulletin No. 25-A.
212S Lockrey Co.

Greases, Silicone.....Announces availability of a fully illustrated brochure on Dow Corning 41 Grease—a silicone fluid-carbon black mixture designed for high temperature, slow bearings. 6 p.
212T Dow Corning Corp.

Grignard Reagents.....8 p. Folder covers pertinent information regarding: properties; uses; standardization; recommended handling procedure; shipping regulations; custom manufacture via the Grignard reaction.
212U Arapahoe Special Products

Herbicides.....Describes how Crag Herbicide-1 prevents crabgrass from ever becoming a problem by killing the seeds as they start to sprout. Request Booklet No. F-8651. Slide film in sound and color also available.
212V Carbide & Carbon Chem.

Hexachlorophene.....Sindar announces the release of a comprehensive bibliography of literature covering the subject of their G-11 brand of hexachlorophene. Contains 136 references. Technical Bulletin No. H-1.
212W Sindar Corp.

Hexamethylenetetramine..... Specialize in producing hexamethylenetetramine in forms best suited for its many and varied uses. This reactive chemical is important in numerous industrial fields. Samples and details.
212X Heyden Chem. Corp.

Hexamethylenetetramine..... Specifications of technical grade hexamethylenetetramine: purity—99.5% formaldehyde — none; ammonia — 0.02% max.; chlorides—0.02% max.; ash—0.05% max.; etc. Samples on request.
212Y Borden Co.

Hexanetriol-1,2,6.....A new long chain polyol for . . . polyurethane resins & isocyanate foams . . . modified alkyd resins . . . humectant-plasticizer applications . . . etc. Request Technical Bulletin F-7779.
212Z Carbide & Carbon Chem.

Hydrocarbons.....104 p. covers data on specifications, properties, shipping & containers for methane, ethane, propane, isobutane, isopentane, isoheptanes, isooctanes, cylopentane, etc. Bulletin No. 510.
212AA Phillips Petroleum Co.

Hydrogen Peroxide.....Latest addition to Solvay's line of alkalies & industrial chemicals, will be produced in 35% & 50% grades, & will be shipped in both drums & tank cars. Prices & general information.
11 *Solvay Process Div.

Hydrogen Peroxide.....Descriptive reference contains general information on properties, reactions and uses of hydrogen peroxide solutions of 27.5% to 50% concentration. Request Product Bulletin No. 2.
213a *Buffalo Electro-Chem. Co.

Hydrogen Peroxide.....Announces release of a valuable literature reference—an article reprint on formation, manufacture, properties & uses of hydrogen peroxide & other peroxides. Request Bulletin No. 2A.
213b *Buffalo Electro-Chem. Co.

Hydrogen Peroxide.....Hydrogen peroxide dry-in process for bleaching wool —describes wool bleaching process, its effect on dyeing properties of wool & a method for improved acid dyeing of bleached wool. Bulletin No. 29.
213bb *Buffalo Electro-Chem. Co.

Hydrogen Peroxide.....Article reprint summarizes the physical properties of 90% hydrogen peroxide. The article also contains detailed information on specific uses and on handling 90% H_2O_2. Request Bulletin No. 3.
213c *Buffalo Electro-Chem. Co.

Hydrogen Peroxide.....“Method of Measuring H_2O_2 Concentration in More Concentrated Solutions” gives directions for permanganate titration in analyzing H_2O_2 solutions. Request Bulletin No. 23.
213d *Buffalo Electro-Chem. Co.

Hydrogen Peroxide.....Article reprint includes a detailed discussion of pumps, containers, piping and valves, etc....for handling high strength hydrogen peroxide. Request copy of Bulletin No. 40.
213e *Buffalo Electro-Chem. Co.

Hydrogen Peroxide.....Product literature describes Becco hydrogen peroxide 35% Formula F—a grade of hydrogen peroxide designed for use in food processing. Covers properties & specifications. Bulletin No. 41.
213f *Buffalo Electro-Chem. Co.

Hydrogen Peroxide.....Supplies valuable article reprint, “History of the Hydrogen Peroxide Industry” . . . a review of the manufacture and use of hydrogen peroxide. Request your copy of Bulletin No. 50.
213i *Buffalo Electro-Chem. Co.

Hydrogen Peroxide.....“Self-Heating of Hydrogen Peroxide Storage Vessels” —a discussion of H_2O_2 storage and storage containers and recommended procedure for H_2O_2 storage. Request copy of Buletin No. 54.
213j *Buffalo Electro-Chem. Co.

Hydrogen Peroxide.....“Stability of Pure Hydrogen Peroxide” discusses effects of purity, stabilizers, acid concentration & other factors on stability of high strength hydrogen peroxide. Bulletin No. 55.
213k *Buffalo Electro-Chem. Co.

Hydrogen Peroxide.....Preparation of alkali cellulose & of viscose described & effects of hydrogen peroxide added to promote aging of alkali cellulose & ripening of viscose discussed. Request Bulletin No. 30.
213ee *Buffalo Electro-Chem. Co.

Hydrogen Peroxide.....“Purification of Metal Salt Solutions with Hydrogen Peroxide”—a review of the use of hydrogen peroxide for removal of iron from various chemical process solutions. Bulletin No. 26.
213vv *Buffalo Electro-Chem. Co.

Hydrogen Peroxide.....Hydrogen peroxide bleaching of chemical & mechanical pulps. New developments & process applications covered on basis of commercial & experimental data. Tables, graphs, flow sheets. Bulletin 32.
213ll *Buffalo Electro-Chem. Co.

*From advt., this issue

Hydrogen Peroxide.....Offers a detailed description of properties & uses of Formula D—a grade of hydrogen peroxide designed for the preparation & bottling of dilute hydrogen peroxide solutions. Bulletin 42.
213g *Buffalo Electro-Chem. Co.

Hydrogen Peroxide.....Furnishes a general outline of properties and behavior of hydrogen peroxide solutions of over 50% concentration. Contains information on handling, construction materials, etc. Bulletin No. 46.
213h *Buffalo Electro-Chem. Co.

Hydrogen Peroxide.....High density pulp bleaching processes—describes use of hydrogen peroxide in steep bleaching, continuous tower bleaching, dryer bleaching, etc., as applicable to various pulps. Bulletin 48.
213nn *Buffalo Electro-Chem. Co.

Hydrogen Peroxide.....20 p., profusely illustrated reference supplies data on the bleaching of wool raw stock, yarns, fabrics...with "Albone" hydrogen peroxide. Also covers safe handling, packaging and storage.
213A E. I. du Pont de Nemours.

Hydrogen Peroxide Solutions.....The analysis of hydrogen peroxide solutions—a critical summary of the most useful methods for analysis of hydrogen peroxide solutions at all concentrations. Request Bulletin No. 59.
213i *Buffalo Electro-Chem. Co.

Hydrogen Peroxide Vapor.....20 p. booklet covers: properties of hydrogen peroxide vapor; decomposition of hydrogen peroxide vapor; generation of hydrogen peroxide vapor; uses; etc. Request Bulletin No. 62.
213m *Buffalo Electro-Chem. Co.

Hydroquinone, Technical.....As a reducing agent . . . or chemical intermediate . . . you will find Tecquinol (Eastman technical hydroquinone) a versatile processing tool. Makes available sample quantities.
213B Eastman Chem. Products.

Hydroxyadipaldehyde.....Because hydroxyadipaldehyde is a dialdehyde, its largest application is in the cross-linking and insolubilization of proteins and polyhydroxy compounds. Offers descriptive literature.
213C Carbide & Carbon Chem.

Hydroxyethyl Cellulose.....Cellosize hydroxyethyl cellulose is a water-soluble, free-flowing, white to light tan powder. Reference covers preparation of Cellosize solutions, properties, uses, etc. No. F-8544A.
213D Carbide & Carbon Chem.

12-Hydroxystearin.....Presents technical data on Castorwax 12-hydroxystearin. Gives valuable explanation on where and why low-cost Castorwax is used. Includes formulation information. Technical Bulletin 7.
213E Baker Castor Oil Co.

Indulin.....A precipitant for proteins, enzymes, and related nitrogenous materials. Company makes available a booklet entitled, "Removal and Recovery of Proteins and Enzymes." Technical Bulletin No. 105-A.
213F West Va. Pulp & Paper Co.

Indulin.....Supplies detailed information on Indulin-70-GR-S, a coprecipitate of lignin and a butadiene-styrene copolymer. Covers data on processing and compounding product. Technical Bulletin No. 113A.
213G West Va. Pulp & Paper Co.

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PERSULFATES

11. Potassium Persulfate.
34. Uses of Persulfates—A Bibliography.
49. Ammonium Persulfate.

SODIUM PERBORATE

45. Sodium Perborate.

PERACETIC ACID

4. Peracetic Acid 40%.
24. Analysis of Aliphatic Peracids.

PEROXYGEN COMPOUNDS

1. Active Oxygen Chemicals.
5. Acetyl Peroxide.
6. Sodium Carbonate Peroxide.
7. Alkaline Earth Metal Peroxides.
8. Sodium Pyrophosphate Peroxide.
10. Urea Peroxide.
28. A Safe Method of Isolation of Acetyl Peroxide.

TEXTILE BLEACHING

25. Analysis of Peracetic Acid Bleaching Solutions.
29. Hydrogen Peroxide Dry-In Process for Bleaching Wool.
30. Hydrogen Peroxide in the Manufacture of Viscose.
35. Modification of Wool with Peroxygen Compounds.
38. Oxidation of Vat Dyes on Cotton and Synthetics with Hydrogen Peroxide.
43. Treatment of Cellulose and Cellulose Derivatives with Peroxygen Compounds.
52. Bleaching with Some Peroxygen Chemicals.
53. Fluorescent Agents in Hydrogen Peroxide Bleaching of Knit Goods.
60. Successful Bleaching of Type 670 Nylon.
61. Knit-Goods Bleaching Range.

PULP BLEACHING

31. Groundwood Bleaching Variables—A Statistical Approach.
32. Hydrogen Peroxide Bleaching of Chemical and Mechanical Pulps.
47. Peroxide Bleaching of Pulps.
48. High-Density Pulp Bleaching Processes.
64. Development Studies on Last-Stage Peroxide Bleaching of Alkaline Pulps.
65. Peroxide Bleaching of Southern Pulps.
66. Becco Laboratory Procedures for Pulp Bleaching, 1955 Edition.

MISCELLANEOUS

15. Peracetic Acid 40%, A New Germicide-Fungicide for the Food Industry.
15A. Application of Peracetic Acid Germicidal Washes to Mold Control of Tomatoes.
16. Epoxidation and Hydroxylation Reactions with Hydrogen Peroxide and Peracetic Acid.
17. Oxidation Reactions with Aliphatic Peracids.
26. Purification of Metal Salt Solutions with Hydrogen Peroxide.
27. Modification of Starches, Proteins and Gums with Peroxygen Chemicals.
33. Seed Treatments with Peroxygen Chemicals.
36. Progress in Peroxides.
39. Surface Treatment of Metals with Peroxygen Compounds.
51. Surface Treatment of Metals with Peroxygen Compounds, Part II.
56. Epoxy Fatty Acid Ester Plasticizers.
58. Epoxidation-Hydroxylation Reactions.
63. Action of Silver-Catalyzed Persulfate on 1,2-Glycols.

BECCO CHEMICAL DIVISION

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NEW YORK • PHILADELPHIA • VANCOUVER, WASH.

Chemicals

Inhibitors, Rust & Corrison—Maleic Anhydride

Inhibitors, Rust & Corrosion.....Illustrated, 24 p. describes Santolene C rust inhibitor. Covers use in petroleum pipelines, use in oil tankers, effect on specific products, etc. Technical Bulletin No. O-62.
214A Monsanto Chem. Co.

Inositol.....Recognized as a significant nutritional factor...inositol has important relationships to cholesterol and fat metabolism. Find complete information on company's Argo Brand in their product booklet.
214B Corn Products Refining Co.

Insecticide Ingredients.....Fatal for flies & mosquitoes—many municipalities & agencies concerned with pest control use Thanite-DDT formulations to rid areas of insect pests. Booklet covers properties & uses.
214C .. .. ..Hercules Powder Co.

Insecticides.....Formulation suggestions for many of the newer pesticides as well as the established ones are provided in addition to other useful emulsification data. Request Technical Bulletin No. 42.
214D Emulsol Corp.

Intermediates.....Individualized intermediates for organic synthesis. Company provides complete information with regard to specifications, description, properties in booklet, "Individualized Intermediates."
214E Michigan Chem. Corp.

Intermediates.....Company furnishes detailed information on monomethylamine, dimethylamine, trimethylamine. This versatile trio represents the most economical source of the amine group. Technical Data Sheet.
214F Commercial Solvents Corp.

Iron Oxides, Red.....Compared with other standard Copperas Reds, "100" series is: brighter in color; finer in particle size; lower in oil absorption; higher in purity; etc. Offers product samples and details.
214G C. K. Williams & Co.

Isobutyraldehyde.....Offers valuable publication, "The Chemistry of Isobutyraldehyde & its Derivatives." Includes synthesis, physical & chemical properties, applications, handling precautions, etc.
214H Eastman Chem. Products.

Isophthalic.....Household and industrial paints, varnishes, enamels, polyesters will all benefit from superior properties contributed by new Oronite Isophthalic. For complete information, request Technical Bulletin.
214I Oronite Chem. Co.

Isopropanol.....Offers new 16 p. reference containing information on the uses, physical & physiological properties, shipping data, specifications, & constant-boiling mixtures of isopropanol. Booklet F-8731.
214J Carbide & Carbon Chem.

Isopropylamine.....The lowest molecular weight alkyl amine which can be supplied in anhydrous form without the use of special pressure containers. Detailed technical information and samples available on request.
214K Sharples Chem.

Ketones.....Have many varied applications as solvents & intermediates in industrial processes. Valuable data on acetone, Solvatone solvent, diethyl ketone, synthetic methyl acetone, etc. in 48 p. Book F-4767C.
214L Carbide & Carbon Chem.

Ketones, Fatty.....Furnishes valuable information on Laurone, Stearone and Oleone—fatty ketones, for use in petroleum waxes, and anti-block compounds. Request your copy of Market Development Technical Bulletin.
214M Armour Chem. Div.

Latex.....Announces the release of informative literature — a pamphlet which describes the properties, applications and processing of special latex. Request Service Bulletin L-6, "Geon Latex 450 x 167."
214N B. F. Goodrich Chem. Co.

Latex, Paint.....When tested against samples of competing latices, Gen-Flo proved best balanced latex—either equal to or better than other products in all vital requirements. Reference data and sample.
214O General Tire & Rubber Co.

Latex, Vinyl.....8 p. describes properties, applications, and compounding of latex which is a water dispersion of an internally plasticized polyvinyl chloride type resin. Bulletin L-5, "Geon Latex 652."
214P B. F. Goodrich Chem. Co.

Latex, Vinyl Acetate Resin.....Designed as high quality vehicle for interior wall sealers & coatings to provide superior color, toughness & resistance to alkalis & cleaning compounds. Technical Bulletins 1 & 225.
214Q Bakelite Co.

Lead Nitrate, Crystal, Technical..... Makes available an informative Data Sheet which gives pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-38371.
201mm *Baker & Adamson

Lignin.....Indulin (pine wood lignin) is an inexpensive sequestering agent for calcium & magnesium ions in neutral to mildly alkaline solutions. Makes available product samples & Technical Bulletins Nos. 107 & 108.
214R West Va. Pulp & Paper Co.

Lignin.....14 p. booklet, "Meadol, A Lignin from Hardwood," outlines the properties and industrial applications of the alkali hardwood lignin Meadol, as well as the chemical modifications of this lignin.
214S Mead Corp.

Lignosulfonates.....Polyfons are lignosulfonates with these properties: solubility in water, alkalies & acids; low surface tension in water; controlled extent of sulfonation; etc. Offers samples & Brochure.
214T West. Va. Pulp & Paper Co.

Limestone.....Finely ground, very white, high calcium limestone . . . for use in paint formulations, rubber compounding, etc. Physical properties & typical chemical analysis included in Bulletin No. 17-101-2-3-54.
214U Harwick Standard Chem.

Lithium.....Lithium Corp. has developed a series of lithium compounds which have proven to be extremely valuable in the enamel field. Makes available descriptive data sheet, "Use of Lithium in Porcelain Enamels."
214V Lithium Corp. of America.

Lithium Aluminum Hydride.....8 p. covers valuable data: molecular weight; color & form; stability; solubility; chemical reactions—inorganic; chemical reactions—organic; handling & use; etc. Bulletin No. 401.
214W Metal Hydrides.

Lithium Amide.....Molecular weight—22.964; color and form—white crystalline; density—1.178 g./cc. at 17.5°C.; melting range—380-400°C.; etc. Makes available a Data Sheet providing complete information.
57a *Lithium Corp. of America.

Lithium Borohydride.....Offers technical information on lithium borohydride. Features valuable uses: organic reducing agent; hydrogenation agent; hydrogen generation; etc. Find complete details in Bulletin 402.
214X Metal Hydrides.

Lithium Carbonate.....Product has had its greatest use in the ceramic and chemical manufacturing fields. Announces the availability of a Data Sheet describing density, solubility, typical analysis, uses, etc.
57b *Lithium Corp. of America.

Lithium Hydride.....Data Sheet offers information covering color and form, density, dissociation pressure, solubility, chemical behavior, applications, availability, purity, handling and storage, etc.
57c *Lithium Corp. of America.

Lithium Metal.....Lithium has been used for many years in metallurgy as a degasifier, deoxidizer, desulfurizer and general purifying agent. Data Sheet covers chemical behavior, applications, purity, etc.
57d *Lithium Corp. of America.

Lithium Stearates,.....Offers detailed report, "Lithium Stearates for the Grease Industry," which covers typical properties, packing data, performance in various base oils, etc. Technical Service Bulletin M-12.
214Y Witco Chem. Co.

Lithium Titanate.....Uses—ceramics: (enamels)—as a mill addition in titanium-bearing enamels for effecting lower burning; (glazes)-used as a mill addition in vitreous & semi-vitreous glazes; etc. Data Sheet.
57e *Lithium Corp. of America.

Lubricants.....The superior non-sludging characteristics & burn-off properties of Ucon synthetic lubricants indicate their suitability for certain high temperature applications. Data in Booklets F-8326A & F-7404.
214Z Carbide & Carbon Chem.

Lubricants.....Witco Stayrites #10 and #P-10 are normal soaps and have found extensive application as general-purpose lubricants and medium-efficiency heat stabilizers for vinyl resins. Technical Service Bulletin S-5.
214AA Witco Chem. Co.

Lubricants, Anti-Corrosion.....Bulletin designed to offer a detailed list of correct lubricants for many specific applications within a wide range of industries, under all types of operating conditions. No. BK-20.
214BB Keystone Lubricating Co.

Lubricants, Molybdenum Disulfide..... Describes Moly-Spray-Kote, a carefully-compounded dispersion of microfine molybdenum disulfide in a self-pressurized aerosol-type sprayer. Request Bulletin No. 102.
214CC Alpha Corp.

Lubricants, Molybdenum Disulfide..... Offers a 4 p. illustrated reference "Fringe Area Lubrication with Molykote Lubricants," which lists all types of this molybdenum disulfide lubricant. Bulletin No. 103.
214DD Alpha Corp.

Magnesia Compounds.....From pharmaceuticals to fertilizers & building board to rubber...magnesia compounds serve industry as fillers, extenders, adsorptive & conditioning agents, etc. Catalog & details.
214EE Michigan Chem. Corp.

Magnesium Aluminum Silicate.....Veegum...a purified magnesium aluminum silicate with thixotropic properties . . . permits higher solids suspensions at lower viscosities. Provides information and product sample.
214FF R. T. Vanderbilt Co.

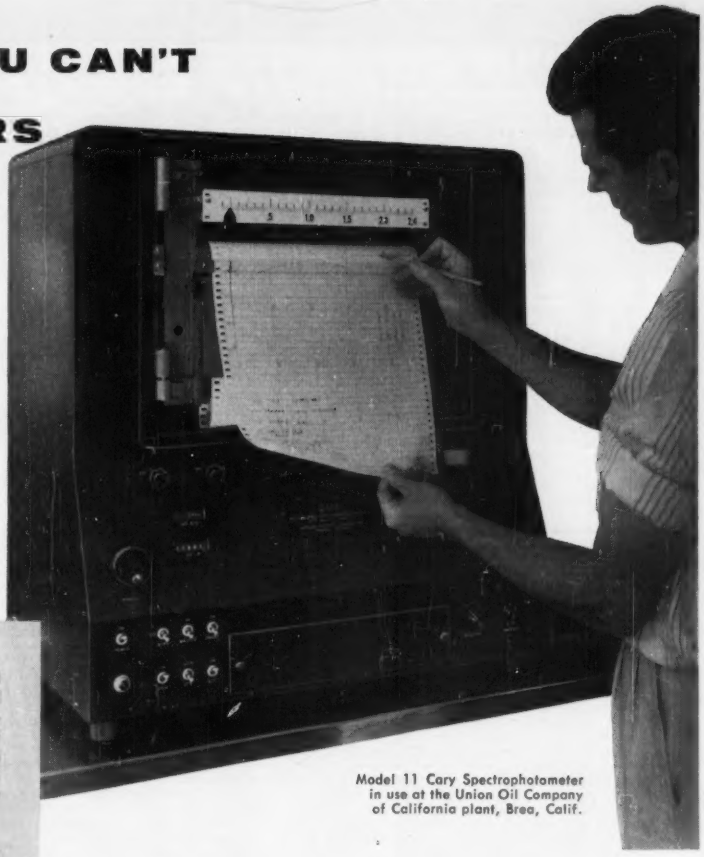
Magnesium Fluoride, Purified.....Company makes available an informative Data Sheet which gives pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-39121.
201nn *Baker & Adamson

Magnesium Stearate Purified.....A fine, white powder; orderless. Uses—a covering agent, a dry lubricant, bodying agent, gel-breaker and emulsifier. Descriptive Technical Information Sheet is made available.
214GG Mallinckrodt Chem. Wks.

Maleic Anhydride.....Plant now produces maleic anhydride in improved tablet form that resists degradation in handling and minimizes fines. Company furnishes product samples, technical information and price data.
214HH National Aniline Div.

*From advt., this issue

YOU CAN'T CUT CORNERS ON ACCURACY AND RELIABILITY



Model 11 Cary Spectrophotometer in use at the Union Oil Company of California plant, Brea, Calif.

RECORDING SPECTROPHOTOMETERS
Cary Spectrophotometers are designed for the rapid recording of spectra with good resolving power and high photometric accuracy. We believe their performance in these respects is unexcelled. In eight years of field experience, these instruments have shown the ruggedness and reliability needed for routine laboratory service . . . plus the flexibility to handle a variety of problems in the research laboratory.

RAMAN SPECTROGRAPH
The Cary Raman Spectrograph uses a unique optical system which offers at least 10 times the light gathering power of previous designs. This, plus other features, provide an instrument that takes full advantage of Raman spectroscopy with high speed and accuracy (for example, with 10 cm^{-1} per sec. scanning speed, 10 cm^{-1} resolution and 0.1 ml sample, benzene gives 0.2% accuracy on the height of the principal peak).

ELECTROMETERS
Cary Vibrating Reed Electrometers . . . for measuring very small currents (as little as 10^{-17} amperes), charges and voltages . . . provide high sensitivity and accuracy with good stability and reliability. Several models are available for a variety of applications . . . carbon 14 determination, mass spectrometry, pH determinations and many similar applications.

INFRARED ANALYZERS
Cary Infrared Analyzers, for continuous analysis of flowing samples, utilize selective detection and a double beam optical system. They are more free from zero drift and have higher inherent discrimination against interfering sample components than other types of analyzers. This provides unusual adaptability to difficult analytical problems requiring high sensitivity and accuracy in complex mixtures.

ULTRAVIOLET ANALYZERS
Cary Ultraviolet Analyzers provide a simple reliable means of continuously analyzing flowing samples for components which absorb UV or visible radiation or which can be converted to a suitable absorbing substance.

It's "penny-wise and pound-foolish" to sacrifice accuracy and reliability for low cost when instruments are to be used in exacting research and control. That's why no effort is spared in the design and construction of Cary Instruments. Painstaking care is exercised to make them accurate, flexible . . . and extremely reliable.

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For instruments that are flexible, accurate and have a high degree of reliability . . . specify Cary.

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INSTRUMENTS

Write for Bulletin CE-1. It gives you an outline on Cary Spectrophotometers and a brief description of other Cary Instruments.

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Chemicals

Maleic Anhydride, cont.—Oils, Industrial

Maleic Anhydride.....The use of maleic anhydride in phthalic-type alkyd resins, in the upgrading of drying oils and in the formation of hard resins and tall oil resins, is described in illustrated, 20 p.
216A Monsanto Chem. Co.

2 - Mercaptobenzoxazole.....Technical Data Sheet supplies pertinent information concerning: structure; appearance; chemical properties; odor; melting point; nature of impurities; solubility; stability; & uses.
216B Monsanto Chem. Co.

Methanol.....Supplies valuable information on Du Pont methanol—specifications, properties, uses, bibliography, etc.—including copy of new pamphlet entitled, "Methanol—The Chemical with 1000 & 1 Uses."
216C E. I. du Pont de Nemours.

Methanol.....Presents a detailed, 16 p. Booklet on synthetic methanol. Valuable information on uses, physical properties, shipping data, specifications, and constant-boiling mixtures. Booklet No. F-8141.
216D Carbide & Carbon Chem.

Methanol.....For dependable deliveries of methanol of the highest quality. Shipments from Morgantown, W. Va. can be made in 8 & 10,000-gallon tank cars, compartmented tank cars, barges, etc. Data & samples.
216E Olin Mathieson Chem. Corp.

Methoxychlor.....Bulletin prepared for processors and manufacturers of aerosol sprays—provides up-to-date information on the use of methoxychlor in aerosol insecticide sprays and oil-based sprays. No. A-7582.
216F E. I. du Pont de Nemours.

Methoxy Polyethylene Glycols.....A Technical Bulletin covers Carbowax methoxy polyethylene glycols. Reference includes information on physical properties, specifications, shipping, etc. No. F-6736.
216G Carbide & Carbon Chem.

Methylamines.....Twenty years experience in producing & handling methylamines assures you products of high purity & uniform, dependable quality. Detailed, authoritative literature covers use of these products.
216H Rohm & Haas Co.

Methyl Amyl Acetate.....One of most effective extraction solvents in recovery & purification of penicillin. Boils at 146.30°C. at 760 mm. Hg. Relative evaporation rate 47 (butyl acetate=100). Samples & data.
216I Carbide & Carbon Chem.

Methylcellulose.....Heat gel with Methocel (Dow methylcellulose) keeps adhesives in place. Superior synthetic gum gels when heated to keep adhesives from penetrating laminate materials. Data and product sample.
216J Dow Chemical Co.

Methyl Cellosolve Acetate.....Excellent solvent for cellulose acetate & other cellulose esters. Includes physical properties, shipping data, general solvent properties, specifications, etc. in Technical Sheet F-8623.
216K Carbide & Carbon Chem.

Methyl Chloride.....18 years of methyl chloride experience is available to help you do a more efficient methylating job. Immediate shipment in any quantities from laboratory cylinders to tank car lots. Full data.
216L Ansul Chem. Co.

Methylcyclohexanol.....Is a cyclic alcohol solvent having wide uses in the paint, plastics and textile industries. New Data Sheet covers typical physical properties, solvent action, suggested uses, etc.
216M Howards & Sons.

N-Methylcyclohexylamine Technical.....A water-white liquid with a specific gravity of 0.86 at 20°C. It is soluble in both alcohol and ether but only slightly soluble in water. Offers fully detailed information.
216N E. I. du Pont de Nemours.

2-Methyl 5-Ethyl Pyridine.....Company supplies product samples and detailed information on 2-methyl 5-ethyl pyridine—intermediate for nicotinic acid . . . reaction medium . . . acid acceptor . . . etc.
216O Carbide & Carbon Chem.

Methyl Glucoside.....New low-cost polyol for use in making resinous coatings, varnishes, drying oils, and surface active agents. Company furnishes product samples and descriptive technical literature.
216P Corn Products Refining Co.

3-Methyl-1-Phenyl-5-Pyrazolone.....An important chemical intermediate to manufacturers of pyrazolone type dyestuffs—also in preparation of fine pharmaceuticals. Makes available an experimental product sample.
216Q Dow Chem. Co.

Mineral Spirits, Odorless.....Amsco odorless mineral spirits manufactured under rigid control to meet exacting specifications. Complete technical information, prices, and samples available upon request.
216R American Mineral Spirits.

Miticides.....Presents an informative Folder concerning the application of Aratron to destroy heavy infestations of spider mites on crops. Outstanding feature is its immediate and effective killing powers.
216S Eston Chem. Div.

Molybdenum.....A flow chart showing how molybdenum is manufactured and controlled quality-wise from oxide to finished product featured in 20 p. book. Also properties, processing, product use, etc. No. NP-428.
216T Sylvania Elec. Products.

Molybdenum.....A guide to selection of molybdenum products for applications in chemical process industries. Covers briefly commercially available products, their manufacture & principal uses. Bulletin No. Ch-1.
216U Climax Molybdenum Co.

Molybdenum.....''Thermodynamic Properties of Molybdenum Compounds'' offers a collection of thermodynamic data for molybdenum & its oxides, sulfides, carbides, nitrides, silicides & halides. Bulletin No. Cdb-2.
216V Climax Molybdenum Co.

Molybdenum Disulfide.....''Lubrication Properties and Industrial Applications of Pure Molybdenum Disulfide,'' reprint of a 4 p. well-illustrated technical paper has been made available to all those interested.
216W Alpha Corp.

Molybdenum Pentachloride.....Reference covers the more important physical & chemical properties of chemically pure molybdenum pentachloride. Also describes preparation of compound. Bulletin Cdb-3.
216X Climax Molybdenum Co.

Molybdic Oxide.....Presents the more important physical & chemical properties. References given to principal works on chemistry of molybdenum & to original articles containing extensive data. Bulletin Cdb-1.
216Y Climax Molybdenum Co.

Molybdic Oxide.....Uses and specifications—furnishes information concerning the uses of molybdic oxide and a complete description of the products available commercially. Request your copy of Bulletin Ch-2.
216Z Climax Molybdenum Co.

Monochlorobenzene.....Highly reactive and versatile raw material for the manufacture of plastics, insecticides, dyes, drugs and many other products in a wide variety of industries. Data and test samples.
216AA Solvay Process Div.

Monomers, Acrylate & Methacrylate.....Ability of copolymers containing acrylates or methacrylates to resist aging is superior to that of corresponding acrylic-free polymers. Information in 38 p. Booklet.
216BB Rohm & Haas Co.

Morpholine.....Issues a Technical Bulletin covering properties, specifications, shipping information, safe handling practices, suggested applications plus a selection of literature references. No. F-8488.
216CC Carbide & Carbon Chem.

Morpholine.....Bulletin provides useful data on physical & chemical properties, uses & potential applications & presents vapor pressure, specific gravity, viscosity, surface tension, & other curves. 48 p.
216DD Jefferson Chem. Co.

Nadic Anhydride.....12 p. booklet summarizes physical properties, chemical reactions & suggested uses of 3,6-endomethylene-Δ^4-tetrahydrophthalic anhydride. Includes 68 literature references. Bulletin 1-5.
216EE National Aniline Div.

Naphthas, Aromatic Petroleum.....Complete series of petroleum fractions enables many manufacturers to select suitable substitutes for the common coal tar solvents at a substantial savings. Samples & data.
216FF Pennsylvania Indus. Chem.

Naphthas, Heavy.....Hisolv heavy naphthas contain methyl naphthelenes & have good solvency for insecticides such as DDT, 2,4-D esters, & chlorinated camphene. Complete specifications & product samples.
216GG Pennsylvania Indus. Chem.

Naphthas, Heavy, Coal Tar.....These are semi-refined, selected coal tar fractions having excellent solvency for applications ranging from wire enamels to roof coating compounds. Offers specifications and samples.
216HH Pennsylvania Indus. Chem.

1, 4-Naphthoquinone.....Lists the physical properties of 1, 4-Naphthoquinone and illustrates its chemical properties by structural equations. Sixteen literature references included. Technical Bulletin No. I-4.
216II National Aniline Div.

Neopentyl Glycol.....Potential uses—polymeric plasticizer manufacture; polyester resin manufacture; alkyd resin modifier. Semi-commercial quantities are immediately available. Request complete information.
216JJ Eastman Chem. Products.

Niacinamide USP Powder.....Features valuable uses: in pharmaceutical preparations; as a specific for treatment of pellagra; to enrich various food products; etc. Complete data in Technical Information Sheet.
216KK Mallinckrodt Chem. Wks.

Nickelous Nitrate, Crystal, Purified.....Makes available an informative Data Sheet which gives pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-40271.
201pp *Baker & Adamson

Nitrate of Soda.....Coarse, medium or fine crystals, screened to suit your particular end use or process—whether explosives, meat packing, ceramic, dye making, food manufacture, etc. Valuable product samples.
216LL Allied Chem. & Dye Corp.

o-Nitrobenzenesulfenyl Chloride.....Soluble in benzene, acetic acid, and chloroform; slightly soluble in ether and carbon tetrachloride. In general, it undergoes reactions similar to acid chlorides. Request Data Sheet.
216MM Monsanto Chem. Co.

o-Nitrochlorobenzene.....Presents a 35-by-44 inch wall chart showing more than 120 organic syntheses based on o-Nitrochlorobenzene. Also contains a literature summary of potential uses for 19 ONCB derivatives.
216NN Monsanto Chem. Co.

*From advt., this issue

Nitrocyclohexane.....An excellent solvent for wide variety of substances, including waxes, resins, natural and synthetic elastomers, and numerous organic chemicals. Data in New Product Information Bulletin.
217A E. I. du Pont de Nemours.

Nitrogen Compounds, Fatty.....Furnishes a line of fatty nitrogen compounds. These compounds are of benefit in flotation of phosphate, potash, feldspar, and (potentially) iron ore. Offers complete technical data.
217B General Mills.

Nitrogen Fertilizer Solutions.....60 p. covers nitrogen fertilizer solutions for direct application. Includes advantages & characteristics of nitrogen solutions, recommended crop applications, etc. Illustrated.
217C Allied Chem. & Dye Corp.

Nitrogen Solutions ....Contents include general description, crystallization temperatures, shipping and storage containers, safety precautions, first-aid measures, etc. Complete details in Technical Data Sheet No. 1.
217D Commercial Solvents Corp.

Nitroparaffins.....As solvents, the NP's present an unusual combination of properties. Request 8 p. Technical Data Sheet for full details, specifications, properties, uses, solubility tables, chemical reactions, handling.
21 *Commercial Solvents Corp.

Nonyl Phenol.....Is a mixture of monoalkyl phenols, predominantly para substituted and is a clear viscous liquid. The side chains are isomeric branched alkyl radicals. Technical information and samples.
217E Jefferson Chem. Co.

Octylphenol & Nonylphenol.....Provides a descriptive, 16 p. Booklet covering company's line of octylphenol and nonylphenol. Includes physical properties, uses, chemical reactions and an extensive bibliography.
217F Rohm & Haas Co.

Oils, Castor.....Comprehensive catalog & product guide of castor oils & chemical derivatives covers uses & suggested applications of over 90 castor oil products with their physical & chemical properties.
239 *Baker Castor Oil Co.

Oils, Essential.....Company announces the availability upon request of their Price Catalog. Valuable reference contains price information for line of essential oils, aromatic chemicals & certified colors.
217G Dodge & Olcott.

Oils, Fusel.....Company announces the availability of descriptive product literature on their line of refined fusel oil . . . a blend of amyl alcohols refined by chemical treatment and distillation.
203-4d *U. S. Industrial Chem. Co.

Oils, Heat Transfer.....If your heat transfer requirements go up to 600° F., you will find that S/V Heat Transfer Oil 600 is the best medium you can use. Bulletin offers complete information on benefits.
217H Socony-Vacuum Oil Co.

Oils, Heavy.....Characteristics of heavy oils make them ideal for weed killing oils, sludge solvents & tar cutbacks. Also useful in the manufacture of insecticides & disinfectants. Specifications & samples available.
217I Pennsylvania Indus. Chem.

Oils, Hydrocarbon.....Non-polar hydrocarbon oils provide exceptional service in wide variety of applications—including anti-caking, anti-dusting & detackifying agents, reaction media, etc. Detailed specifications.
217J Pennsylvania Refining Co.

Oils, Industrial.....Armox oils in lubricants solve cold weather and hot water problems. Company offers upon request valuable samples of Armox LPO and Armox ATO—in addition to their Industrial Oil Booklet.
217K Armour Chem. Div.

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advanced engineering is the important factor in

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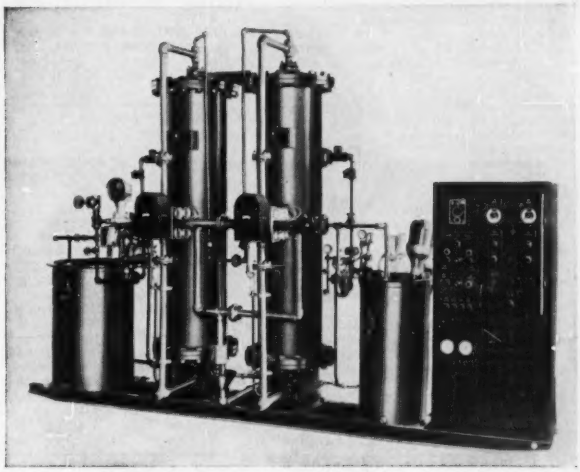

ION EXCHANGERS

American Ion Exchange Units incorporate the latest developments in the use of ion exchange resins for the treatment of water for industrial processes, and for the application of ion exchange in the processing of chemical food and pharmaceutical products. Supplied in monobed units or with separate anion and cation beds, with manual control or any degree of automation required.

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Economically and continuously providing the equivalent of distilled water for industrial process, American Demineralizers, by ion exchange, remove dissolved mineral solids. Water passes through a cation unit which exchanges hydrogen for cations, then through an anion unit where acids and solids are removed — or in a monobed unit both cation and anion exchanges are accomplished in a single unit.

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HYDROGEN SODIUM ZEOLITE SOFTENERS • DEMINERALIZERS • CHEMICAL FEEDERS • CONTINUOUS BLOWDOWN • SWIMMING POOL EQUIPMENT

Chemicals

Oils, Industrial, Cont.—Phosphorus Thiochloride

Oils, Industrial.....Detailed specifications, shipping data & suggested usage on products of animal, vegetable & marine sources including: oleic acids, red oils, stearic acids, glycerines, etc. 8 p. Bulletin.
218A Swift & Co.

Oils, Solvent.....Include Shingle Stain Oils, neutral extenders for creosote, holder oils for the gas industry and thinners for bituminous paints. Used in many other applications. Offers specifications and samples.
218B Pennsylvania Indus. Chem.

Oils, Sperm.....18 p. folder, "ADM Sperm Oil Products," includes: characteristics; chemical & physical properties, composition; solubility chart; applications & suggested uses; etc. Technical Bulletin No. 904-A.
218C Archer-Daniels-Midland Co.

Oils, Vegetable, Vulcanized.....Information on vulcanized vegetable oils (rubber substitutes)—function in rubber, physical & chemical properties, white rubber substitutes, brown rubber substitutes, etc.
218D Carter Bell Mfg. Co.

Oils, Wool.....Company furnishes upon request a descriptive booklet entitled, "Twitchell 7421 Oil," covering their anti-static fiber lubricant for use in processing woolens, worsteds, and blends.
218E Emery Industries.

Olefins.....Important properties have opened up great areas for improvement of both quality & economy in large-scale manufacture of rubber chemicals, varnish resins, germicides, etc. Technical Bulletin.
218F Atlantic Refining Co.

Oxamide, Purified.....Company announces availability of an informative Data Sheet which gives pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-48651.
201qq *Baker & Adamson

Oxidation Reactions.....“Oxidation Reactions with Aliphatic Peracids” discusses preparation of peracid solutions & their use in various oxidation reactions of interest in organic synthesis. Bulletin 17.
213uu *Buffalo Electro-Chem. Co.

b,b'-Oxydipropionitrile.....Technical Data Sheet available containing information regarding appearance & color, stability, solubility, chemical properties & uses, toxicity & safe handling instructions, etc.
218G Monsanto Chem. Co.

Papermaking.....Laboratory method developed to produce two-sidedness accurately in sample papers. Used to develop color formulations which give minimum two-sidedness on mill-run sheet. Technical Bulletin 827.
218H American Cyanamid Co.

Paraffins, Chlorinated.....16 p. technical bulletin, “Chlorowax in Flame Retardant Rubber Compounds,” concisely reviews use of two chlorinated paraffins for improving flame retardance of rubber compounds.
218I Diamond Alkali Co.

Paraformaldehyde.....For high solids resins it's Celanese paraformaldehyde. Reference describes the benefits of short cut to lower costs and greater resin production. Find complete data in Technical Bulletin N-30.
218J Celanese Corp. of America.

Paraformaldehyde Powder.....Celanese offers a general purpose, fine ground paraformaldehyde suitable for all powder applications. Covers physical properties, specifications, uses, etc., in Bulletin No. N-17-5.
218K Celanese Corp. of America.

*From advt., this issue

Pellets, Chemical.....Announces publication of a profusely-illustrated Catalog Sheet descriptive of X-73 chemical pellets for ice and snow removal. Describes application methods and expected results.
218L Monroe Co.

Pentaerythritol.....Answers need of alkyd resin manufacturers for a pentaerythritol that qualifies for every application. Bulletin gives full story, backed by formulations, tests, comparisons & cost analyses.
218M Celanese Corp. of America.

Pentaerythritol, Technical.....Utilize Pentek pentaerythritol, technical . . . the polyol which has long served as the standard for top performance in the resin & paint fields. Samples & technical information.
218N Heyden Chem. Corp.

1,5-Pentanediol.....Makes available useful literature and information on this promising new chemical. Forms esters and polyesters which may find use as plasticizers, emusifying agents and resin ingredients.
218O E. I. du Pont de Nemours.

Peracids, Aliphatic.....Analysis of aliphatic peracids—description of new method based on use of ceric sulfate as a titrant for H_2O_2 present, followed by iodometric determination of peracid present. Bulletin No. 24.
213s *Buffalo Electro-Chem. Co.

Peroxide Bleaching.....Reprint of lecture from University of Maine Lecture Series on pulp and paper manufacture. Describes present status of peroxide bleaching of pulps. Bibliography appended. Bulletin No. 47.
213mm *Buffalo Electro-Chem. Co.

Peroxide Bleaching Processes.....Three Eecco peroxide bleaching processes which are of prime utility for bleaching, superbleaching and prevention of reversion of Southern woods are described in Bulletin No. 65.
213pp *Buffalo Electro-Chem. Co.

Peroxides.....A review of present status of application research on uses of hydrogen peroxide & peracetic acid in bleaching, organic synthesis, polymerization, sanitizing, etc. Request illustrated Bulletin No. 36.
213yy *Buffalo Electro-Chem. Co.

Peroxides, Alkaline Earth Metal.....Descriptive Bulletin contains valuable information on chemical and physical properties, uses and handling of calcium peroxide, zinc peroxide, and magnesium peroxide. No. 7.
213w *Buffalo Electro-Chem. Co.

Peroxygen Compounds.....Uses of peroxygen compounds for carroting, fulling, shrink-proofing and dyeing of wool are discussed on the basis of a large number of literature references. Find data in Bulletin No. 35.
213dd *Buffalo Electro-Chem. Co.

Peroxygen Compounds.....Surface treatment of metals with peroxygen compounds—survey of recommended procedures for passivating, cleaning, etching, stripping, oxidizing and coating metal surfaces. Bulletin No. 39.
213zz *Buffalo Electro-Chem. Co.

Ever use chemicals?

Of course you do — every chemical engineer does. So you'll want to take a hard look at our Inventory of New Chemicals & Materials in this issue. It's a handy rundown of major developments during the past twelve months. Nothing ever like it before (p. 77).

Peroxygen Compounds.....Describes the use of peroxygen compounds for reducing degree of polymerization and refining of cellulose . . . and for desulfurizing viscose rayon filaments. Bulletin No. 43.
213ff *Buffalo Electro-Chem. Co.

Peroxygen Compounds.....Reference deals in great detail with chemical polishing processes for steel, aluminum and brass, surface cleaning and surface passivating procedures. Ten references. Bulletin No. 51.
213ab *Buffalo Electro-Chem. Co.

Persulfates.....Offers reference, “Uses of Persulfates—A Bibliography”— a selected list of literature references based on “Chemical Abstracts” & covering period from 1907 to 1950. Bulletin No. 34.
213o *Buffalo Electro-Chem. Co.

Phenobarbital USP Powder.....An odorless, white powder having a somewhat bitter taste. Uses—a sedative, hypnotic and antispasmodic in human and animal treatment. Full details in Technical Information Sheet.
218P Mallinckrodt Chem. Wks.

Phenol.....Employs the newest process and the most modern equipment in the production of phenol, U.S.P. Major manufacturing facilities indicate Oronite as a reliable phenol source. Request fully illustrated Folder.
218Q Oronite Chem. Co.

Phenol.....Company operates as one of the world's major producers of phenol. Announces the availibility upon request of a valuable booklet containing information about the properties, uses, handling, etc.
218R Dow Chem. Co.

m-Phenylenediamine.....An amber brown solid soluble in alcohol, ether & water. Up to 1.5% of ortho isomer may be present as impurities. Water insolubles are below 0.2%; ash, below 0.1%. Provides free sample.
218S E. I. du Pont de Nemours.

Phenyls & Biphenyls, Chlorinated.....Acting as an extreme pressure lubricant base . . . Aroclors possess many advantages: stability; nonvolatile; nonoxidizing; etc. Complete data on uses covered in Bulletin P-128.
218T Monsanto Chem. Co.

Phosphates.....Maas TSP, the versatile phosphate, has many uses besides its detergent & soap applications—helps make better adhesives for plywood industry, makes cutting oil emulsions better, etc. Data in Folder.
218U A. R. Maas Chem. Co.

Phosphites.....Valuable data on dibutyl, dioctyl, tributyl & trihexyl phosphites. These neutral compounds are colorless liquids with mild, pleasant odor & good thermal stability. Provides Brochures & samples.
218V Virginia-Carolina Chem.

Phosphorous, Elemental.....Whether used in 99.9% pure elemental form or in ever-widening range of phosphorus derivatives & compounds, company's line assures highest quality & uniformity. Literature & samples.
218W American Agricultural Chem.

Phosphorus Oxychloride.....Water-white to slightly yellow liquid. It decomposes in water to yield phosphoric & hydrochloric acids, & is chemically very reactive. Company makes available valuable product sample.
218X Victor Chem. Wks.

Phosphorus Pentasulfide.....Widely used in making lubricant additives, it is one of many phosphorus products carrying AA Quality seal—symbol of highest quality & uniformity. Furnishes information & samples.
218Y American Agricultural Chem.

Phosphorus Thiochloride.....Phosphorus thiochloride is a faint yellow to colorless liquid with a distillation range of 120-125°C. Typical analysis: 18.5% phosphorus and 18.6% sulfur. Request product sample.
218Z Victor Chem. Wks.

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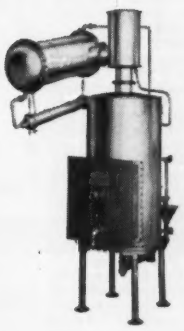

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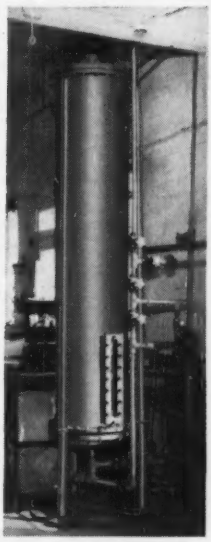

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Chemicals

Phthalic Anhydride—Propellents

Phthalic Anhydride.....Recommendations for in-plant handling of versatile compound in either liquid (molten) or flake form fully discussed, along with special phthalic anhydride shipping methods, in new booklet.
220A Monsanto Chem. Co.

Phthalic Anhydride.....12 p. Technical Bulletin provides detailed information on Oronite phthalic anhydride. Covers chemical & physical properties, important uses, reactions with phosphorus pentachloride, phenol, etc.
220B Oronite Chem. Co.

Pigments, Iron Oxide.....Reduce grinding and dipersing time in paints and allied products as much as 75%. Physical and chemical specifications and a list of suggested applications. VVF Tech Report.
220C C. K. Williams & Co.

Plasticizers.....Cures at lower temperatures—cuts processing time. Offers complete details on the many advantages of Tennessee's new plasticizers . . . Benzoflex 9-88 and 2-45 for your vinyl formulations.
220D Tennessee Prouct & Chem.

Plasticizers.....Provides technical and comparative data covering: di octyl phthalate-HR; iso octyl-iso decyl phthalate; di iso decyl phthalate; di iso octyl adipate; di iso decyl adipate; di octyl sebacate.
220E Dewey & Almy Chem. Co.

Plasticizers.....36 p. reference includes information on Plastolein plasticizers, performance data comparisons, performance charts, preparation of test samples, test methods, compatibility, etc. Available on request.
220F Emery Industries.

Plasticizers.....40 p. reference offers latest laboratory findings on lacquers & lacquer plasticizers. Covers specifications, characteristics, properties, formulations, applications, etc. Technical Bulletin No. 76-A.
220G Archer-Daniels-Midland Co.

Plasticizers.....Stabilizing effect of Paraplex G-62 in vinyl compounds demonstrated during tests under intense sunlight. Properties & data in "What You Should Know About the Paraplex & Monoplex Plasticizers."
220H Rohm & Haas Co.

Plasticizers.....Hatco plasticizers are distinguished for their high purity and superior stability. Reference covers uses for plasticizers, specifications, physical properties of pure compounds, etc. 8 p. Booklet.
220I Hatco Chem. Co.

Plasticizers.....Atlas G-2401 offered to manufacturers & users of glue compositions for evaluation as a plasticizer in printers' rollers, cork binders, dextrin adhesives, gaskets, etc. Technical Bulletin offered on request.
220J Atlas Powder Co.

Plasticizers.....Booklet offers complete information on line of plasticizers. Covers specifications, properties, typical uses for dimethyl phthalate, diethyl phthalate, dibutyl phthalate, triacetin, tributyrin, etc.
220K Eastman Chem. Products.

Plasticizers.....Celluflex CEF builds exceptional fire-retardancy into a wide variety of plastics & surface coatings . . . including polyesters, vinyls, cellulosics, polyurethanes. Test sample & technical data.
220L Celanese Corp. of America.

Plasticizers.....Citroflex plasticizers are unique in that they are all derived from citric acid, a tribasic, monohydroxy acid well known for its many food applications. Details of line in Technical Bulletin No. 31.
220M Chas. Pfizer & Co.

Plasticizers.....Presents completely revised Bulletin which covers sections on chemical and physical properties, specifications, resin compatibility and performance characteristics. Santicizer 141—Bulletin O-89.
220N Monsanto Chem. Co.

Plasticizers.....Santicizer 160 offers valuable advantages: it has a wide range of campatibility, resists abrasion and extraction by various oils, gasoline and water. Data in Technical Bulletin No. 0-92.
220O Monsanto Chem. Co.

Plasticizers.....76 p. includes selector chart based on compatibility, physical properties & descriptions of Flexol plasticizers, & discussion of relation of physical properties to performance characteristics.
220P Carbide & Carbon Chem.

Plasticizers.....Technical Bulletin describes company's line of Good-rite plasticizers. Includes data on Good-rite GP-265 (octyl decyl phthalate), GP-266 (didecyl phthalate), GP-235 (octyl decyl adipate), etc.
220Q B. F. Goodrich Chem. Co.

Plasticizers.....You'll find Adipol ODY an excellent primary plasticizer for most resins. It imparts permanent flexibility & a low temperature flexibility of —70°C. to finished products. Technical data & samples.
220R Ohio-Apex Div.

Plasticizers, Vinyl.....Describes HB-20—a partially hydrogenated alkyl-aryl hydrocarbon developed primarily to meet large demand for a low cost extender type plasticizer for vinyls. Technical Bulletin No. O-P-153.
220S Monsanto Chem. Co.

Plasticizers, Vinyl.....Epoxy fatty acid ester plasticizers—an investigation of the performance of epoxy fatty acid esters as vinyl plasticizers. For a copy of valuable article reprint, request Bulletin No. 56.
213ae *Buffalo Electro-Chem. Co.

Plastisols, Vinyl.....Company presents an informative Technical Bulletin concerning fungus resistant vinyl plastisols. Bulletin reports the correlation of experimental work by many major vinyl producers.
220T Scientific Oil Compounding.

Polybutenes.....Vistac polybutenes for caulking compounds, adhesives, electronic components, electrical products, rubber compositions, pressure sensitive tapes, etc. Offers Bulletin 114 and product samples.
220U Advance Solvents & Chem.

Polybutenes.....Feature valuable advantages: high viscosity; minimum thermal decomposition residue; non-drying; color stable; non-migrating; low cost; etc. For details, request Technical Bulletin No. 12.
220V Indoil Chem. Co.

Polyethylene.....Makes available descriptive literature and product samples of company's A-C Polyethylene—the low-molecular-weight polymer. Its low viscosity lets you blend with your present equipment.
107 *Semet-Solvay Petrochem. Div.

Polyethylene.....Data Sheet offers complete information on Agilene-HT, irradiated polyethylene . . . a specially selected grade of polyethylene that is irradiated with highly energized subatomic particles.
220W American Agile Corp.

Polypropylene Glycols.....Issues a Technical Bulletin on polypropylene glycols. Physical properties, specifications, and shipping information are included for series: 150, 425, 1025, and 2025. No. F-7220A.
220X Carbide & Carbon Chem.

Polystyrene, Expandable.....24 p. describes a new foamable polystyrene. Applications in various industrial fields are discussed. Includes technical data with charts and diagrams in color. Bulletin No. C-4-204.
220Y Koppers Co.

Polyvinyl Acetate Emulsions.....Line includes 4 standard Darex polyvinyl acetate polymers & 4 special copolymers with unusual qualities. Covers properties, features & typical end uses in Brochure No. E-12.
220Z Dewey & Almy Chem. Co.

Polyvinyl Acetate Emulsions.....PVA series of polyvinyl acetate emulsions—both homopolymer & copolymer types—is available for immediate shipment. Request valuable Bulletin on PVAc emulsions for paints.
220AA Celanese Corp. of America.

Polyvinyl Acetate Emulsions.....You can have a better product at lower cost with Vinac polyvinyl acetate emulsions—for paints . . . concrete . . . adhesives . . . paper . . . etc. Data and product samples.
220BB Colton Chem. Co.

Polyvinyl Acetate Emulsions.....New Polyco 577G for outstanding water resistance—a 55% solids anionic type polyvinyl acetate emulsion designed for interior flat paints—& for coatings for textiles & paper. Data & samples.
220CC Borden Co.

Polyvinyl Materials.....Company presents valuable reference, "Geon Polyvinyl Materials for Industrial and Consumer Uses." Contains 10 p. of photographs and typical applications of various types of Geon.
220DD B. F. Goodrich Chem. Co.

Polyvinylpyrrolidone.....Pure versatile polymer for industry. Offers unique combination of properties & a wide range of applications. Technical data on this high pressure acetylene derivative, samples, prices, etc.
220EE General Aniline & Film.

Potash, Caustic.....Mercury cell caustic potash . . . a grade that sets new standards for purity—and at a price no higher than ordinary premium grade low chloride material. Samples, prices, technical data.
220FF Solvay Process Div.

Potassium Acetate, N.F., Crystal, Technical.....Offers an informative Data Sheet which gives pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-40821.
201rr *Baker & Adamson

Potassium Acid Saccharate.....This monopotassium salt of a polyhydroxy di-basic acid offers vast opportunities in the manufacture of industrials and pharmaceuticals. Samples and information available on request.
220GG Sanders Chem. Co.

Potassium m-Bisulfite Granular..... White, free-flowing crystalline granules; slight odor of sulfur dioxide. Widely used in food and beverage industry. Details in company's Technical Information Sheet.
220HH Mallinckrodt Chem. Wks.

Potassium Borohydride.....White microcrystalline powder—soluble in water, alcohols, liquid ammonia. Non-hygroscopic. Stable in air. Decomposes in vacuum at 500°C. Completely descriptive literature on request.
220II Metal Hydrides.

Potassium Carbonate.....Potassium carbonate now available in 91-94% powdered form . . . for faster dissolving—for better compounding. Inspection samples and descriptive information sent upon request.
220JJ Solvay Process Div.

→ Want more information on any of these items? Just write its code number on one of the postcards inside the back cover, then mail it to us. It's that easy now.

*From advt., this issue

Potassium Cyanate, Powder, Purified .....Makes available an informative Data Sheet which gives pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-41591.
201uu *Baker & Adamson

Potassium Cyanide.....Data on a new form of potassium cyanide, known as CyaNodes. Formed by cast process—are dust-free, sulfur-free, non-flaking. High in purity, dissolve very quickly, and safer to handle.
221A Kraft Chem. Co.

Potassium Pentaborate.....Covers theoretical composition, solubility in water, pH values, representative chemical analysis, maximum limits of impurities, density, uses, etc. Technical Bulletin No. 9.
221H Pacific Coast Borax Co.

Potassium Persulfate.....Company announces the availability of literature describing the product line. Includes information on chemical & physical properties, uses & handling. Request Bulletin No. 11.
213n *Buffalo Electro-Chem. Co.

Potassium Silicates.....Kasil potassium silicates are useful because of the wide range of physical and chemical properties which they offer. 8 p. fully illustrated reference provides details on properties and uses.
221C Philadelphia Quartz Co.

Potassium Tetraborate.....Technical Bulletin furnishes details on theoretical composition, physical & chemical properties, stability, solubility in water, representative chemical analysis, etc. Request No. 13.
221D Pacific Coast Borax Co.

Potassium Titanium Fluoride.....Company makes available an informative Data sheet which covers pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-40722.
201ac *Baker & Adamson.

Powders, Diatomite.....Celite inert diatomite powders provide more potent insecticide dusts at low cost. Covers details of advantages and properties of insecticide carriers, in fully illustrated, 4 p. Folder.
221E Johns-Manville.

Preservatives.....Offer many advantages: high effectiveness against molds and bacteria; extremely low toxicity confirmed by extensive tests; non-irritating to skin; colorless, odorless; etc. Technical Bulletin.
221F Heyden Chem. Corp.

Preservatives.....Copper 8-quinolinate, technical is most effective commercial preservative yet developed for controlling rot and mildew in textile and related fields. Booklet on Milmer 1 offers full details.
221G Monsanto Chem. Co.

Preservatives.....Highly effective preservative (bactericidal—fungicidal) for water-based paints and coatings . . . industrial emulsions . . . latex. Light in color, practically odorless. Samples and literature.
221H Guardian Chem. Corp.

Preservatives.....Fourteen different Dowicide preservatives currenty increase manufacturing efficiency or improve product quality for paint, textile, petroleum, adhesives, etc. industries. Full data on uses.
221I Dow Chem. Co.

Propargyl Halides.....Three centers of reactivity. Chemical intermediate for terpenes and pharmaceuticals, etc. Agricultural uses as soil fumigant, etc. Request technical information, price schedules, product sample.
221J General Aniline & Film Corp.

Propellents.....Freon propellents are ideal for all types of products & they are safe . . . nonflammable, nonexplosive, virtually nontoxic. Digest of the 7th Annual Aerosol Market Survey made available.
221K E. I. du Pont de Nemours.

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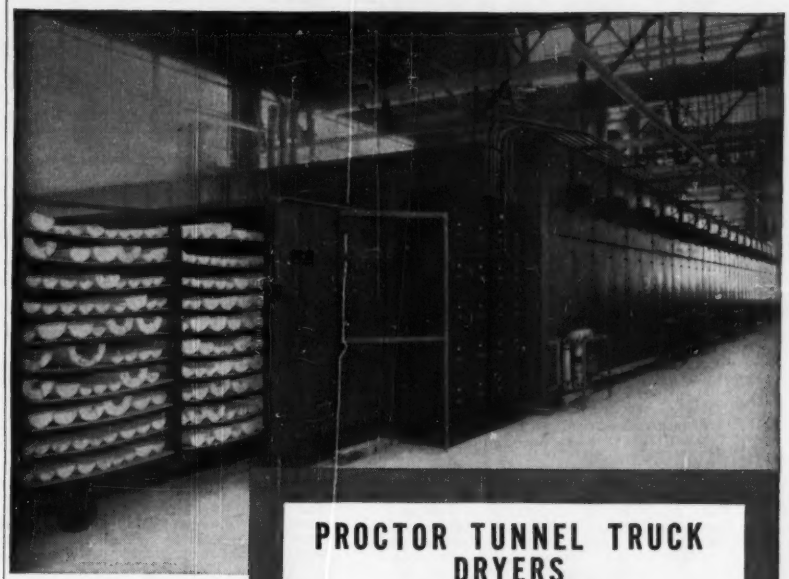

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Chemicals

n-Propyl Acetate—Resins, Phenol-Formaldehyde

n-Propyl Acetate.....A medium boiling ester—for: nitrocellulose & other synthetic resins. Physical properties, Celanese specifications, performance in nitrocellulose lacquers, etc. Product Bulletin S-29-4.
222A Celanese Corp. of America.

Propylene Glycol.....New 16 p. Folder presents data on physical and physiological properties, specifications, shipping containers, constant-boiling mixtures, solubilities, and applications. Data Folder F-8738.
222B Carbide & Carbon Chem.

Propylene Oxide.....Features usage in the production of petroleum de-emulsifiers and textile lubricants. Also an effective stabilizer in formulation of products from resins that contain chlorine. Full data in F-8485.
222C Carbide & Carbon Chem.

Protozyme.....Contains high potency standardized proteolytic or protein degrading enzymes. Choice for breaking up peptides, solubilizing albuminous substances, removing gelatine from film, etc. Data & sample.
222D Jacques Wolf & Co.

Pyridose Powder.....A coarse white or slightly yellow hygroscopic powder; slight odor of acetic acid. Effective, economical anti-slime agent for use in paper mills. Full data in Technical Information Sheet.
222E Mallinckrodt Chem. Wks.

Pyridoxine Hydrochloride Powder..... A fine, white crystalline powder; odorless. Many uses: an additive to enrich certain food products; in treatment of vitamin deficiency; etc. Technical Information Sheet.
222F Mallinckrodt Chem. Wks.

Pyrrole.....An extremely reactive chemical compound with a number of unusual characteristics, described in new technical reference—physical properties, potential applications, reactions, etc. Bulletin No. 27.
222G E. I du Pont de Nemours.

Quaternary Ammonium Compounds..... Covers Arquad 2T—a quaternary ammonium salt of Armeen 2T, useful in corrosion problems & as a cationic emulsifier & anti-static agent. Market Development Technical Bulletin.
222H Armour Chem. Div.

Reagents.....Aerofloc reagents are synthetic polymers which are useful in flocculating finely-divided solids in aqueous suspensions. Help solve filtration or thickening problems—request valuable Brochure.
222I American Cyanamid Co.

Reagents.....Dajac reagents feature only the highest purity & quality. Announces the release of a new & enlarged catalog listing over one hundred reagents required for medical research & biochemical testing.
222J Dajac Labs.

Reagents, Laboratory.....Announces new 1955 Products Book...a 266 p. illustrated guide to services, products and special facilities of the foremost producer of laboratory reagents and fine chemicals.
222K Baker & Adamson Products.

Refrigerants, Super-Dry.....Guaranteed: exceptionally low moisture content; non-corrosive to standard equipment materials; non-toxic, nonflammable, stable, safe; etc. Request valuable new "Genetron" Folders.
83 *General Chem. Div.

Reodorants.....Releases valuable bulletins: "Theory of Odor & Alamask"; "Alamask for Petroleum Industry"; "Air Pollution Abatement for Petroleum Refining Operations"; "Alamask for Rubber Industry"; etc.
222L Rhodia, Inc.

*From advt., this issue

Resins.....“Polymer Progress” (No. 1) includes sections on: Epon 828 in tooling applications; the chemistry of curing Epoxy resins; Epon adhesives in military applications; experimental Epon curing agent U.
222M Shell Chem. Corp.

Resins.....Technical Booklets include a wide range of data relative to the use of Vinsol resin as a low-cost component of Buna-N, vinyl and other type adhesives. Covers properties and modifications.
222N Hercules Powder Co.

Resins.....Provides valuable information on line of phenolic, vinyl, styrene resins for coatings in descriptive booklet, “Bakelite Resin Coatings for the Chemical Industry.” Data on numerous applications.
222O Bakelite Co.

Resins.....Company announces the release of a Technical Bulletin which describes its line of phenolictype laminating resins. Detailed properties of the resins & the finished laminates included in reference.
222P Synvar Corp.

Resins.....24 p. explains use of Geon Resin 121 in plastisol compounding & gives charts & data on flow properties. Also describes various applications & preparation & fusion of material. Bulletin No. PR-3.
222Q B. F. Goodrich Chem. Co.

Resins.....New resins, Lustrex 710 & 770, are suggested as tackifiers, dispersants, thickeners & flocculants in a variety of aqueous systems. A 10 p. bulletin, including 5 viscosity curves, available on request.
222R Monsanto Chem. Co.

Resins.....Epon resin coatings based on the XA-200 formulation . . . find outstanding success in the chemical process industries. Brochure covers full Epon coatings story—“Planning to Paint a Pyramid?”
222S Shell Chem. Corp.

Resins.....Use the unique properties of Piccolastic resins...to improve your products. Makes available samples and a Bulletin furnishing complete information regarding the various grades of these resins.
222T Pennsylvania Indus. Chem.

Resins.....Staybelite's resistance to oxidation, its pale color & lack of odor make it ideal as processing aid for all types of soling & heels. Technical Booklet covers diversified uses in rubber compounding.
222U Hercules Powder Co.

Resins, Acrylic.....Lucite acrylic resins available with a wide range of molding characteristics & properties & in a variety of transparent, translucent & opaque colors. Offers descriptive literature on request.
99d *E. I. du Pont de Nemours.

Resins, Anion Exchange.....Presents a new brochure which describes in detail the nature and operating characteristics of this alaphatic-type anion exchanger. Request the 16 p. Duolite Data Leaflet No. 31.
222V Chemical Process Co.

Resins, Casting.....Stycast 2340 M is a two part casting resin requiring no catalyst addition. Reference includes a general description, properties, and instructions for curing. Request Technical Bulletin No. 7-2-8.
222W Emerson & Cuming.

Resins, Casting.....Literature describes Epocast 4-C...an aluminum colored casting resin primarily designed as a facing for kirksite, lead, cast iron, or aluminum die cores. Request Technical Bulletin EP-54-9a.
222X Furane Plastics.

Resins, Coumarone-Indene.....The special pale, low-odor coumarone-indene resin...prescribed for freeze-thaw stable PVAc emulsion paints . . . features valuable cost-saving advantages. Request samples & data.
222Y Neville Chem. Co.

Resins, Epoxy.....Three Brochures contain detailed descriptions of epoxy resins and hardeners. Specific information furnished on the physical properties. Request Bakelite Technical Bulletins Nos. 1, 2, 3.
222Z Bakelite Co.

Resins, Epoxy.....Illustrated 16 p. on use of resins for tools, dies, jigs, fixtures, adhesives, laminating, casting, potting, embedding & encapsulating. “Bakelite C-8 Epoxy Resins & Hardeners,” No. J-763.
222AA Bakelite Co.

Resins, Fluorothene.....Presents technical data on line of fluorothene resins. Includes history, chemical structure, properties, fabrication, applications, etc. Full information in 16 p. Booklet No. J-739.
222BB Bakelite Co.

Resins, High Styrene.....Darex 43G is an excellent rubber reinforcing resin for shoe soles, floor tiles, wire & cable insulation, mechanical molded goods. Characteristics, features, etc., in new Brochure No. C-15.
222CC Dewey & Almy Chem.

Resins, Industrial.....For new developments in industrial resins & varnishes, plastics compounds, silicones, electrical insulating materials, plastics laminating & molding, etc. request Booklet No. CDG-101.
222DD General Elec. Co.

Resins, Ion Exchange.....Edition of Nalco Bulletins provide technical data on Nalcite SAR & Nalcite SBR anion exchangers...includes complete up-to-the-minute information on silica removal. Bulletins 57, 58 & 60.
222EE National Aluminate Corp.

Resins, Laminating.....Furnishes a descriptive reference describing Epocast 2 . . . an unfilled, fast setting epoxy resin primarily intended for laminating at room temperature. Request Technical Bulletin EP-54-24.
222FF Furane Plastics.

Resins, Nylon.....Zytel is the du Pont trade-mark for a versatile group of long-chain synthetic polymeric amides exhibiting extreme toughness & strength. Complete data on properties & applications on request.
99e *E. I. du Pont de Nemours.

Resins, Para - Coumarone - Indene..... Provides detailed information on line of Piccoumaron para coumarone indene resins. Compatibilities, color and melting point ranges of Piccoumaron included. Bulletin 12-64-4-1-54.
222GG Harwick Standard Chem.

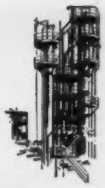
Resins, Para - Coumarone - Indene..... Line of Piccoumaron resins provide skillfully balanced properties. Available in 10 melting points, from a liquid to a hard brittle solid. Request Bulletin and product samples.
222HH Pennsylvania Indus. Chem.

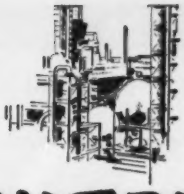
Resins, Phenol-Formaldehyde.....Offers data on Gen-Tac resin...a water-soluble, phenol-formaldehyde resin for use in dip preparations to obtain adhesion between rubber & fabric. Bulletin No. 12-171-1-1-54.
222II Harwick Standard Chem.

Can't remember?

Can't quite recall who built that new plant, who developed that new process? Well, then, take a crack at finding the answer in this issue's Inventory of New Plants & Facilities (p. 7) or Inventory of New Processes & Technology (p. 33). They're designed to help you.

VERSATILE STAYNEW LIQUID FILTERS





For Oils, Water, Chemicals, Coolants

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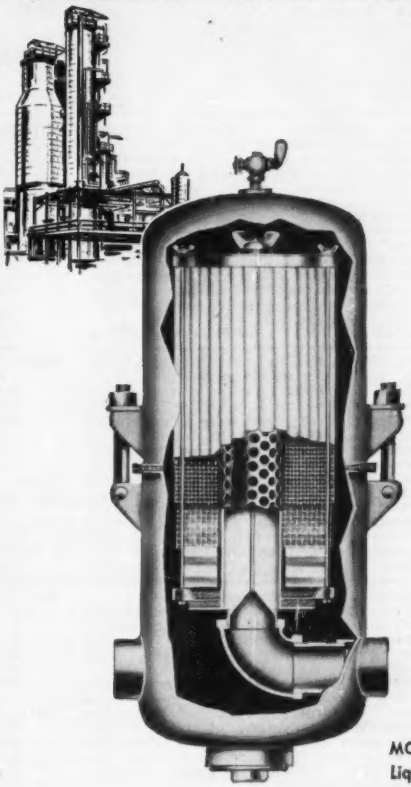
PRACTICALLY any liquid can be efficiently and economically filtered by a Staynew Liquid Filter. They are designed for adaptation to virtually any space requirement or any arrangement of inlet and outlet connections. All known types of filtering media are available to provide any degree of efficiency for any specific problem, or for use regardless of temperature, pressure or corrosion requirement. All units can be constructed according to the API-ASME and the various ASME Code specifications. Staynew Model ELS liquid filters are available in many types of materials other than regular steel, such as stainless steel, monel, herculoy and other non-corrosive materials.



MODEL ELS
Liquid Filter

PARTIAL LIST OF LIQUIDS THAT CAN BE FILTERED BY STAYNEW LIQUID FILTERS

Acetone
Acids
Adhesives
Alcohols
Alkalis
Ammonia
Asphalt
Benzene
Benzine
Beverages
Butane
Casein
Castor Oil
Caustic
Cellulose Solutions
Chlorine
Chocolate
Cleaning Fluids
Coating
Coolants
Cutting Oils
Emulsions
Enamels
Ethanolamine
Ethylamine
Extracts
Flameproofing Solutions
Fuel Oil
Furniture Polish
Gasoline
Glue
Greases
Gums
Hydraulic Fluids
Ink
Kerosene
Lacquers
Latex
Liquid Paraffin
Lubricants
Molasses
Naphtha
Paint
Pharmaceuticals
Propylene
Quenching Oils
Resins
Rubber Cements
Sizing
Soap
Solvents
Steam Condensate
Syrups
Tar
Turpentine
Varnish
Vegetable Oils
Viscose
Water
Wax

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Chemicals

Resins, Phenolic—Sodium Dispersions

Resins, Phenolic.....Issues bulletin, "Durez Resins in the Rubber Industry." Synthetic rubber latices, solvent-type adhesives & compounding of hard & semi-hard rubber stocks are among the subjects covered.
224A Durez Plastics & Chem.

Resins & Plastics.....“1955 Guide to Improved Packaging with Bakelite Plastics & Resins” offers data on Bakelite polyethylene, phenolic, styrene, C-11 & vinyl plastics & resins. 8 p. Booklet No. G-21.
224B Bakelite Co.

Resins, Polyamide.....Company's line of polyamide resins may be applied as heat-seal adhesive, by either hot melt or solvent solution technique. They bond at moderate temperatures. Complete technical information.
224C General Mills.

Resins, Polyester.....Manual includes valuable Bulletins on several of the more popular grades of Interchemical polyester resins, as well as data on Interchemical color concentrates, binders, etc.
224D Interchemical Corp.

Resins, Polyester.....Lighter, tougher plane bodies...with Polyite polyester resins—a great new basic material for aviation and scores of other industries. For details, request Polylite Brochure PR.
224E Reichhold Chem.

Resins, Polyethylene.....Illustrated, 16 p. includes: what is polyethylene?; how is it made?; what are its properties?; what is it used for?; how is it processed?; how is it fabricated?; etc. Request booklet, No. 5M555.
224F U. S. Industrial Chem. Co.

Resins, Polyethylene.....Tough, flexible Alathon polyethylene resin stands up well against abrasive slurries. Widely used in industrial pipe applications. Offers complete information on the properties and applications.
99b *E. I. du Pont de Nemours.

Resins, Polystyrene Cation Exchange..... Describes in detail the characteristics of this new type of polystyrene cation resin, with operating data. Leaflet covers capacity performance, salt efficiency, leakage, etc.
224G Chemical Process Co.

Resins, Sorbitol.....Sorbitol provides specific advantages of quality and economy in the formulation of certain resins used in protective finishes. Descriptive booklet includes physical characteristics.
224H Atlas Powder Co.

Resins, Synthetic.....Reference lists, with characterizing data, all standard commercial products of the Synthetics Department—synthetic resins, pentaerythritol, plasticizers, nonionic surface-active agents.
224I Hercules Powder Co.

Resins, Tetrafluoroethylene.....Teflon tetrafluoroethylene resins used extensively in process industries. Offer chemical inertness, high heat resistance, low-temperature toughness, etc. Properties & applications.
99a *E. I. du Pont de Nemours.

Resins, Thermoplastic.....Presents a illustrated Booklet containing information about plant facilities, technical service, testing equipment, and the company's Exon line of thermoplastic resins. 20 p.
224J Firestone Plastics Co.

Resins, Vinyl.....12 p. illustrated reference offers valuable data on Geon resins 404HI & 103EP—vinyl chloride resins which provide numerous advantages for easy processing into rigid shapes. Service Bulletin G-14.
224K B. F. Goodrich Chem. Co.

Resins, Vinyl Butyral.....These resins were developed to meet the need for a better safety glass laminating adhesive film. Data on properties, solubility, compatibility, etc. in 28 p. Technical Release No. 11.
224L Bakelite Co.

Resins, Vinyl Chloride.....Furnishes physical, electrical, and chemical information on the company's high impact strength vinyl chloride resin as compounded for rigid applications, in Bulletin No. G-13.
224M B. F. Goodrich Chem. Co.

Resins, Vinyl Dispersion.....Data on application technique for low-cost plastisol coatings on wire goods, paper, fabric, foil, and electrical assemblies made available in 36 p. Technical Release No. 14.
224N Bakelite Co.

Resins, Vinyl Plastisol.....Technical information on properties, compounding and application of Opalon 410 vinyl plastisol resin is contained in a 22 p. report. Liberally illustrated with charts and graphs.
224O Monsanto Chem. Co.

Retarders.....Pertinent technical information concerning company's Retarder TCM-25. Includes a complete description, background material, chemical composition, toxicity, flammability, etc. Tech Bulletin No. 1.
224P Binney & Smith

Retarders, Flame.....Recently developed antimony compound for use with chlorine-containing materials makes vinyls self-extinguishing. Economical to use—initial cost is low. Data Sheet offers detailed information.
224Q Metal & Thermit Corp.

Rosin.....Offers 8 p. booklet on Galex, a stabilized non-oxidating rosin which is specifically compounded for all uses where ordinary rosin is detrimental due to oxidation. Covers typical properties and numerous uses.
224R National Rosin Oil Products.

Rosin Amine Derivatives.....Numerous new opportunities for product improvements offered by Hercules' group of water-soluble rosin amine derivatives. Covers water-soluble, oil-soluble & acid-soluble types.
224S Hercules Powder Co.

Salt Tablets, Impregnated.....Salt lost through perspiration causes fatigue and heat exhaustion. All this can be eliminated by taking Pep-Up impregnated salt tablets. Detailed literature and price data upon request.
224T U. S. Safety Service Co.

Salts, Tetrazolium.....Blue Tetrazolium is extremely useful in demonstrating oxidation-reduction enzymes in tumors. It is used as a standard for cortisone determination. Makes available descriptive Data Sheet.
224U Dajac Labs.

Sequestering Agents.....Nullapons are outstanding sequestering or chelating agents capable of controlling, by deionization, undesirable di- or tri-valent metal ions in aqueous solution. Literature & samples.
224V Antara Chem.

Sequestering Agents.....From aluminum to zinc, Perma Kleer-80 is 100% efficient in the chelation of most metal ions, including ferric, throughout the entire pH range. New, revised product Booklet now available.
103 *Refined Products Corp.

→Want more information on any of these items? Just write its code number on one of the postcards inside the back cover, then mail it to us. It's that easy now.

Sesquicarbonate of Soda.....Comprehensive booklet, "Snowflake Crystals and Snowfine," offers complete information on physical and chemical properties. Fully illustrated with photographs, tables and graphs.
224W Solvay Process Div.

Silica, Colloidal.....A submicroscopic particulate silica prepared in a hot gaseous environment (1100°C.) by the vapor phase hydrolysis of a silicon compound. Properties, functions and uses in Booklet No. CGen-1.
224X Godfrey L. Cabot.

Silica, Fused.....Illustrated Folder describes Rotosil fused silica: applications (chemical, metallurgical, electrical); properties; physical characteristics; types of equipment available in Rotosil; etc.
224Y Amersil Co.

Silica Gel.....A superior drying agent for natural gas. For detailed information and field performance data on the use of Davison silica gel for the drying of natural gas request Technical Bulletin No. 201.
224Z Davison Chem. Co.

Silica Gel.....Company announces the availability upon request of data sheets on “Reactivation of Bulk Silica Gel” & “Regeneration of Protek-Sorb 121”—the latter being the Davison packaging dessicent.
224AA Davison Chem. Co.

Silicates, Soluble.....Manufacturers of soluble silicates makes available upon request a folder covering the subject of treating concrete. Request your copy of “Treating Concrete with O Silicate.” 6 p.
224BB Philadelphia Quartz Co.

Silicones.....Issues 1955 Reference Guide listing silicone products and their uses—adhesives; dielectrics; foamed structures; lubricants; protective coating vehicles; release agents; water repellents; etc.
224CC Dow Corning Corp.

Soaps, Metallic.....Used in many industries: paint; lacquer & varnish; plastics; rubber; lubricant; etc. Complete data furnished in informative 32 p. reference entitled, “Metallic Soaps for Research & Industry.”
224DD Metasap Chem. Co.

Soaps, Stannous.....Now available in pilot plant & research quantities is an interesting group of new tin chemicals comprising a wide variety of solvent-free stannous soaps. Offers complete & detailed information.
224EE Metal & Thermit Corp.

Soda Ash.....West End is a pure white, free-flowing and rapidly soluble soda ash that produces a far cleaner, more uniform product. Announces the availability of product samples, prices, and technical information.
224FF West End Chem. Co.

Soda, Caustic.....12 p. on economics of caustic soda. Answers many important questions such as, “What form of caustic soda should I buy? How do I figure costs? How much will I save? What equipment will I need?”
224GG Columbia-Southern Chem.

Soda, Caustic.....Company announces the availability of a 60 p. descriptive book on caustic. Valuable reference features one section devoted completely to the economics of transportation cost and prices.
224HH Wynandotte Chem. Corp.

Soda, Caustic.....The economies of 73% caustic soda solution are no longer reserved for the largest users . . . lower shipping costs now make it the best form for you. Offers comprehensive Caustic Soda Handbook.
224II Dow Chem. Co.

Soda, Caustic.....Technical & engineering service bulletins cover a wide scope of subjects. Includes: physical & chemical properties, use, handling & storage of caustic soda, soda ash. Bulletin Nos. 5 & 6.
224JJ Solvay Process Div.

*From advt., this issue

Soda, Caustic.....Plastic bound, 64 p. fully illustrated Manual on analysis, shipping, handling, storage and unloading—the authoritative handbook on caustic soda. Includes numerous charts, tables, diagrams, etc.
225A Columbia-Southern Chem.

Soda, Caustic....."Caustic Soda Buyer's Guide" contains helpful facts on economics of 50% & 73% solutions; other forms of caustic soda; capacities of tank cars & other containers; useful shipping data; etc.
225B Hooker Electrochem. Co.

Sodium.....Valuable booklet, "The Chemistry & Uses of Sodium" presents a high-spot survey of some of the reactions of sodium, so that you may better visualize its possible uses in your industrial operations.
225C Ethyl Corp.

Sodium Acetylides.....Offer a tremendous potential in the field of industrial organic synthesis. Company makes available a Fact Sheet which contains information on typical reactions, preparation & handling.
225D Ethyl Corp.

Sodium Alcoholates.....Valuable, varied and versatile . . . can be prepared from sodium and most desired alcohols at low cost, thus providing economically attractive raw materials for many uses. Request Booklet.
225E Ethyl Corp.

Sodium Amide.....Sodium amide may provide the answer to your chemical processing problem. Makes available a detailed reference containing information on uses, preparation, properties and handling, etc.
225F Ethyl Corp.

Sodium Borate.....Latex-base paints and coatings can be made flame-resistant with new FR-28 . . . a readily soluble sodium borate powder. Complete information in Special Bulletin No. 6-F and Data Sheet No. FR-28.
225G Pacific Coast Borax Co.

Sodium Borohydride.....Features numerous uses; organic reductions; foaming agent; hydrogen generation; hydrogenation; etc. For technical information regarding sodium borohydride request Bulletin 502.
225H Metal Hydrides.

Sodium Carbonate Peroxide.....Company announces the availability of literature describing the product line. Included are chemical and physical properties, uses and handling. Request Buletin No. 6.
213v *Buffalo Electro-Chem. Co.

Sodium Chromate Tetrahydrate..... Small yellow crystals which dissolve readily in water to give a very bright solution substantially free from iron, vanadium & trivalent chromium. Request Product Data Sheet MP-1.
225I Mutual Chem. Div.

Sodium Citrate.....Electroless nickel plating of intricate insides with . . . Pfizer sodium citrate as your sequestering and buffing agent. For details, request Technical Bulletin 68, "Electroless Nickel."
225J Chas. Pfizer & Co.

Sodium Cyanide.....High purity sodium cyanide is available in egg, flake and granular form. Find out how you can profit from using this product in your manufacturing processes. Request literature and information.
225K E. I. du Pont de Nemours.

Sodium Dispersions.....Consist of microscopic sodium particles (1-20 microns) suspended in inert hydrocarbons. Booklet covers properties, applications; tells how to prepare & handle sodium in this form.
203-4v *U. S. Industrial Chem. Co.

Sodium Dispersions.....Illustrated, 32 p. book, "Using 'Ethyl' Sodium in Dispersed Form," covers: advantages of dispersions; uses of sodium dispersions; preparation of dispersions; handling dispersions; etc.
225L Ethyl Corp.

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Chemicals

Sodium Fluoborate, Crystal, Technical—Starches

Sodium Fluoborate, Crystal, Technical . . . . . Furnishes an informative Data Sheet which gives pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-42401.
201ad *Baker & Adamson

Sodium Fluoride. . . . . Widely used for public water fluoridation, AA Quality sodium fluoride and sodium fluosilicate combine uniformity with quality. Makes available a descriptive Data Sheet and product samples.
226A American Agricultural Chem.

Sodium Hydride. . . . . Includes pertinent data: molecular weight; crystalline form & color; density; typical analysis; melting point; heat of formation; heat of reaction with water; etc. 7 p. Bulletin No. 507.
226B American Hydrides.

Sodium, Metallic. . . . . Atomic layers of metallic sodium can be coated on the surface of finely divided solids such as salt, soda ash, carbon, alumina, metal oxides and sand. Offers booklet, "High Surface Sodium."
203-4w *U. S. Industrial Chem. Co.

Sodium Molybdate. . . . . Announces the availability of descriptive literature, "Where to Get Sodium Molybdate." Sources of small packages of sodium molybdate for experimental work. Request copy of Bulletin No. Ag-3.
226C Climax Molybdenum Co.

Sodium Nitrate. . . . . Features quality sodium nitrate. Danitra double refined USP Grade contains not more than 0.05% chlorides . . . .05% sulphates . . . 0.10% moisture. Offers product samples and price data.
226D Davies Nitrate Co.

Sodium Nitrite. . . . . Detailed information on the use of sodium nitrite as an inexpensive and efficient rust and corrosion inhibitor presented in a booklet, "Sodium Nitrite for Rust and Corrosion Prevention."
226E Solvay Process Div.

Sodium Pentaborate. . . . . Covers theoretical composition, physical and chemical properties, stability, hydrogen ion concentration, typical analysis, impurities, screen specifications, etc. Technical Bulletin No. 14.
226F Pacific Coast Borax Co.

Sodium Perborate. . . . . Becco sodium perborate is widely used for dye development and in the manufacture of powder bleaches, cosmetics, etc. For complete product information, request detailed Bulletin No. 45.
213q *Buffalo Electro-Chem. Co.

Sodium Phosphates. . . . . Company announces availability of published reference—an easy-reading booklet giving a complete review of technical & commercial aspects of phosphates today & in the future.
226G Monsanto Chem. Co.

Sodium Phosphates. . . . . Describes product line—sodium tripolyphosphate, tri-sodium phosphate (crystalline—monohydrate), tetrasodium pyrophosphate (anhydrous), sodium polyphos, etc. Request catalog & handbook.
226H Blockson Chem. Co.

Sodium Pyrophosphate Peroxide. . . . . Announces the availability of descriptive literature on sodium pyrophosphate peroxide—chemical and physical properties, uses and handling. Product Bulletin No. 8.
213x *Buffalo Electro-Chem. Co.

Sodium m-Silicate. . . . . For free-flowing compounds choose Metso Anhydrous. Due to special manufacture, Metso Anhydrous' unique physical structure increases resistance to caking from moisture. Offers product sample.
226I Philadelphia Quartz Co.

Sodium m-Silicate. . . . . Valuable data on Drymet anhydrous—the most highly concentrated form of sodium m-Silicate. Drymet File Folder contains complete technical information and suggested formulations.
226J Cowles Chem. Co.

Sodium Stearate Purified Powder. . . . . A fine, white powder; slight fatty acid odor. Thickening & wetting agent for creams, shampoos & water base ointments; detergent for dentifrices; etc. Technical Information Sheet.
226K Mallinckrodt Chem. Wks.

Sodium Sulfides. . . . . Quick-dissolving sodium sulfides give clear solutions—free of sediment—in 15 minutes. Data Sheets available. Bulletin 100 furnishes information on Hooker's products and services.
226L Hooker Electrochem. Co.

Sodium Sulfite Anhydrous Photo Granular . . . . . Fine, white, free-running crystalline granules; odorless. Chiefly used in photographic developing and fixing solutions. Details in Technical Information Sheet.
226M Mallinckrodt Chem. Wks.

Sodium Sulfonates. . . . . Have gained wide recognition & are being extensively used in industrial operations & processes which include: emulsification; emulsion breaking; dispersion; detergency; etc. 16 p. Bulletin.
226N Oronite Chem. Co.

Sodium Tetraborate. . . . . Detailed information on company's Borax, sodium tetraborate—theoretical composition, physical & chemical properties, stability, industrial applications, etc. Technical Bulletin No. 1.
226O Pacific Coast Borax Co.

Sodium Tetraborate Pentahydrate. . . . . Now available in commercial quantities (Borax 5 Mol). Includes theoretical composition, typical analysis, bulking value, industrial uses, etc. in Technical Bulletin No. 2-M.
226P Pacific Coast Borax Co.

Sodium Trimethoxyborohydride. . . . . White porous powder, m.p. 230°C., with decomposition. Evolves hydrogen with water. Soluble in organic solvents. Makes available complete product information in Bulletin 504.
226Q Metal Hydrides.

Softening Agents. . . . . Company's new softening agent—Arquad 2HT—gives a soft finish to all fabrics . . . natural and synthetic. Makes available a Technical Bulletin with complete data plus a product sample.
226R Armour Chem. Div.

Solvents. . . . . Issues a new, illustrated, 44 p. booklet entitled, "Cellosolve and Carbitol Solvents." Describes in detail the nine commercial glycolethers sold by the company. Request Booklet No. F-4765.
226S Carbide & Carbon Chem.

Solvents. . . . . Announces a new solvent for decarbonizing and paint stripping. Technical Data Sheet covers complete description, function, method of control, outstanding characteristics, method of handling and use, etc.
226T Curran Corp.

Solvents. . . . . 75 p. booklet, "Organic Solvents and Chemicals," contains valuable information on line of alcohols, ketones, esters, glycol ethers, plasticizers, chlorinated solvents, glycols, amines, etc.
226U C. P. Chem. Solvents.

Solvents. . . . . 2-50-W Hi-Flash solvent offers you: high flash point; high solvency power; good odor; coal tar origin; slow, even evaporation rate; attractive low price; etc. Samples and prices available on request.
226V Neville Chem. Co.

Solvents. . . . . Armid O acts as a mutual solvent for primary ingredients of quality wax paper coatings—1% of Armid O makes coatings transparent & flexible. Request product sample & a copy of the Armids Booklet.
226W Armour Chem. Div.

Solvents. . . . . Versatile solvents feature important applications in the manufacture of inks and dyes, resins and plasticizers, textile chemicals, etc. Request complete information, Data Sheets, valuable product samples.
226X Olin Mathieson Chem. Corp.

Solvents. . . . . Describes Ketosol solvent 75 . . . a mixture of acetophenone and phenyl methyl carbinol. Data on properties, container contents, methods of handling, potential applications. Technical Bulletin F-7370.
226Y Carbide & Carbon Chem.

Solvents. . . . . Your guarantee of a consistently good paint—use Espesol solvents of superior uniformity. Catalog describes complete line for synthetic enamels, resins, varnishes, for thinning surface coatings.
226Z Eastern States Chem. Corp.

Solvents. . . . . Assure controlled evaporation. In paint & surface coating industry . . . solvents offer precise characteristics to meet your most exacting requirements. Full data on characteristics & specifications.
95 *Esso Standard Oil Co.

Solvents, Organic. . . . . New revised 64 p. handbook on organic solvents tells about: flash point; toxicity; dry time; solvent power. Reference includes definitions, comparison tables, testing methods, etc.
226AA Solvents & Chem. Group.

Solvents, Petroleum. . . . . Manufacturer makes available a Buyers' Guide to petroleum solvents and their properties. Lists aliphatic naphthas, paraffinic hydrocarbons and aromatic hydrocarbons and solvents.
226BB American Mineral Spirits.

Spheres, Phenolic Resin. . . . . Offers technical performance data on Microballoons . . . a new method of reducing evaporation of crude oil in cone-roof tanks. Covers properties & methods of installation. Illustrated.
226CC Bakelite Co.

Stabilizers. . . . . "Witco Stayrites, Stabilizers for Vinyl Resins" describes materials & methods for stabilizing vinyl resins. Covers 14 stabilizers of cadmium-barium, synurgist, non-toxic, lead, etc. types. 24 p.
226DD Witco Chem. Co.

Stabilizers. . . . . Describes Stayrite #70—a new stabilizer for polyvinylchloride type resins . . . combining superior qualities of both cadmium & barium fatty acid soaps. Technical Service Bulletin No. S-2.
226EE Witco Chem. Co.

Stabilizers. . . . . Stayrite #90 is a new addition to line of stabilizers for polyvinyl chloride resins, developed to meet the most rigorous toxicity specifications. Data & properties in Technical Service Bulletin S-7.
226FF Witco Chem. Co.

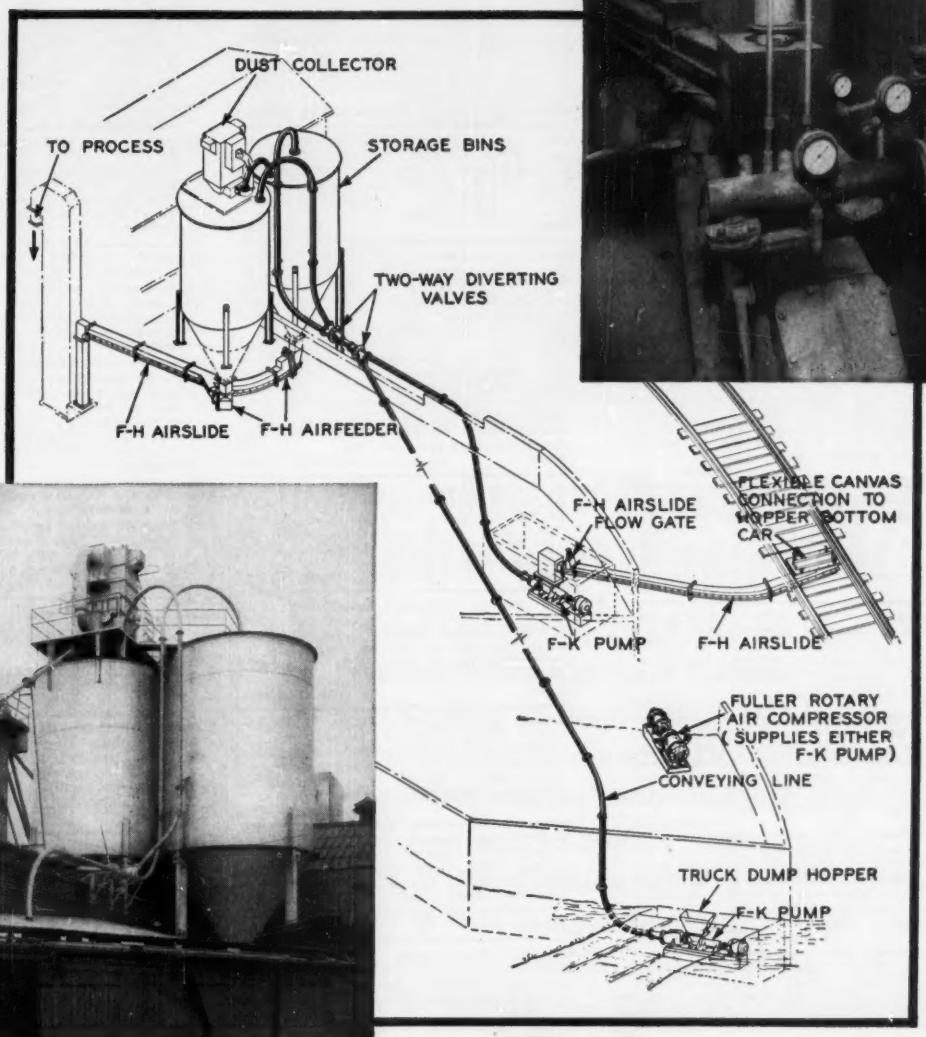
Stabilizers, Vinyl. . . . . Company announces the availability of two new Technical Data Sheets containing valuable information on vinyl stabilizers, Advastabs T-72 & BA-13P. Includes advantages and specifications.
226GG Advance Solvents & Chem.

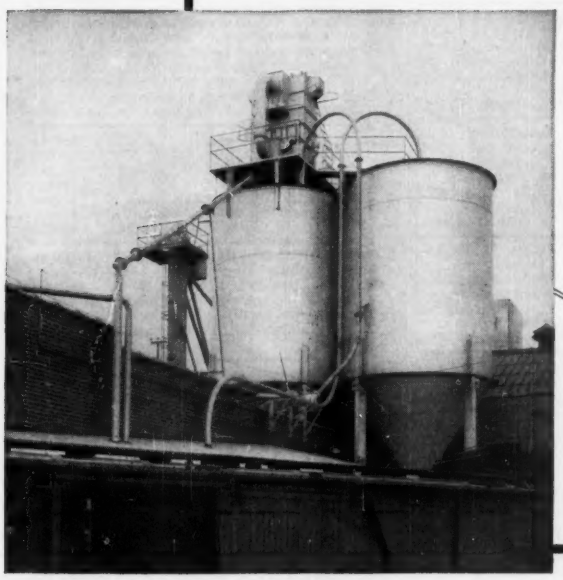
Stannous Chloride. . . . . A stable, anhydrous material . . . does not deteriorate with age—permits low-cost large-quantity purchasing. Solutions can be stored for long periods of time without clouding. Complete data.
226HH Metal & Thermit Corp.

Stannous Chloride, Crystal, Technical . . . . . Presents an informative Data Sheet which gives pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-43421.
201ae *Baker & Adamson

Starches. . . . . Valuable 56 p. booklet, "The Story of Starches," completely describes the broad variety of National starches, the way they are produced, and the miracle of "man-made" starch derivatives. Request your copy.
226II National Starch Products.

*From advt., this issue





Certain-teed makes certain with Fuller

... Unloading and conveying system pays off

A few years ago, Certain-teed Products Corporation decided to find, if possible, more economical methods of operation in its York, Pa. plant. One problem given serious consideration was the handling of incoming limestone and slate filler dust received in bags, requiring costly, manual labor, resulting in breakage of bags with consequent loss of material and a dusty condition in the plant.

Together, Certain-teed and Fuller engineers made studies of their layout and came up with a solution—a combination of the Fuller-Kinyon Conveying System and F-H Airslides.

Two Fuller-Kinyon Pumps are used. One conveys limestone dust from hopper-bottom cars, utilizing the Airslide to convey from cars to the pump located in a pit in the plant. This pump conveys to either one of the two storage bins . . . efficient, clean, rapid transfer from cars to storage. The other pump handles the slate dust, delivered in trucks, also conveying to storage. Withdrawal of either material from storage bins is accomplished with Airslides, which discharge to an elevator delivering to process.

Air for the pumps is supplied by a Fuller Rotary Single-stage Compressor, having a capacity of 482 c.f.m. at 20-lb. pressure. Low-pressure air, for the Airslides, is supplied by a small blower.

It is reported that the savings realized by the use of this Fuller system has paid for the installation in less than two years of operation.

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DRY MATERIAL CONVEYING SYSTEMS AND COOLERS . . . . PREHEATERS . . . . . COMPRESSORS AND VACUUM PUMPS . . . . FEEDERS

Chemicals

Stearates—Wax Removers

Stearates.....Illustrated, 36 p. covers Witco stearates . . . their properties and uses. Includes alumium stearates, cadmium stearates, calcium stearates, lead stearates, lithium stearates, etc. Bulletin No. 53-1.
228A Witco Chem. Co.

Stearates, Metallic.....Furnishes a completely illustrated Technical Booklet on metallic stearates . . . the latest source of information about the uses and benefits of stearates and associated chemicals. 26 p.
228B Synthetic Products Co.

Stimulants, Oil-Well.....An 8 p. booklet just published gives full technical information on ATPET 931...a chemical used for economical treatment of oil wells that are subject to water damage. Request reference CD-88.
228C Atlas Powder Co.

Styrene Molding Materials.....Releases up-to-date wall chart comparing properties of styrene molding materials. Covers recommended area of application, particle form, lubrication, recommended mold temperature, etc.
228D Monsanto Chem. Co.

Styrene Monomer.....Lists products obtained from this basic chemical, & their applications. Include synthetic rubber, polystyrene, styrene butadiene latices, polyester resins, etc. 23 p. No. C-4-198.
228E Koppers Co.

Styrene Monomer.....Company also makes available supplemental information of a more detailed technical nature—such as chemical reactions, methods of handling and analysis. Technical Bulletin No. C-4-119.
228F Koppers Co.

Styrene Monomer.....Starting point for large volume chemical manufacturing —styrene-based dispersions, polyester resins, elastomers, styrene modified alkyd resins, styrenated oils, etc. Details in illustrated, 44 p.
228G Monsanto Chem. Co.

Succinonitrile.....16 p. includes properties, summary chart of typical organic reactions, chemical reactions, potential uses, toxicity & handling information, & a bibliography. Technical Bulletin No. 0-116.
228H Monsanto Chem. Co.

Sulphur Dioxide.....For processes requiring a superior reducing or bleaching agent, preservative, antichlor, pH control, or neutralizer. Provides samples, specifications and gives complete information.
228I Tennessee Corp.

Sulphur Dioxide.....A versatile chemical reagent for industry, sulphur dioxide can be used as a reducing or bleaching agent, preservative, antichlor, neutralizer, pH control. Details in "Virginia SO_2" Folder.
228J Virginia Smelting Co.

Sulphuric Anhydride, Stabilized.....Sulfan has 99.5% SO_3 available for sulfonation reactions. In many applications, this means considerable savings in operating costs. Request complete technical information.
228K General Chem. Div.

Surface Active Agents.....Technical Bulletin on Surfynols—a new class of nonionic surface active agents. Suggested uses: low foam detergent formulations—anti-gelling agents—viscosity depressants—etc.
228L Air Reduction Chem. Co.

Surface Active Agents.....Contains detailed specifications on basic grades of Monamines, as well as chemical, physical & physiological properties on the entire line. Also data on use & compounding. Folder No. 220.
228M Mona Industries.

Surface Active Agents.....Choose Tergitol—powerful surfactants that serve all industry. Non-Ionics (all purpose surfactants)—Anionics (wetting & penetrating surfactants). Detailed technical literature.
228N Carbide & Carbon Chem.

Surface Active Agents.....Information on Croda Cithrol polyglycol esters . . . a range of non-ionic surface active agents. Leaflet contains a complete description in addition to numerous applications. 4 p.
228O Croda, Ltd.

Surface Active Agents.....Cationic surface active agents found useful in a wide variety of applications. Offers booklet describing the properties and characteristics of "Armeens"—primary and secondary amines.
228P Armour & Co.

Surface Active Agents.....Product information booklet covers Siponics, nonionic surface active agents. Describes the physical properties and many uses of three new Siponics now available through the firm.
228Q American Alcolac Corp.

Surface Active Agents.....100%-active nonionic surface-active agents offer over-all balance of desirable properties; ease of formulation, stability, controlled sudsing, etc. Complete technical data on Pluronics.
228R Wyandotte Chem. Corp.

Surface Active Agents, Non-Ionic..... Covers Nopalco non-ionic surface active agents. Contents include description, key, to tabular data, key to solubility terms, solubility data, etc. Bulletin P-19-86-0-5-54.
228S Nopco Labs.

Surfactant Selectors.....Atlas HLB Selector helps emulsion formulator by providing a ready reference to recommendations on Atlas surfactants & HLB values for 96 typical emulsion formulas. Selectors on request.
228T Atlas Powder Co.

Surfactants, Non-Ionic.....Covers advantages of new "plus" features: water-white appearance; noticeable lack of odor; non-stratifying liquid; sediment-free. Booklet offers complete data on surfactants.
228U Antara Chem.

Surfactants, Non-Ionic.....HLB values for over 100 surfactants made by various manufacturers are presented in a booklet entitled, "Calculation of HLB Values of Non-Ionic Surfactants," available on request.
228V Atlas Powder Co.

Tetrapotassium Pyrophosphate.....Detailed examination of present and potential uses of TKPP in a variety of industries. Data on properties, sequestration, etc., in 4 p. Technical Bulletin No. 505 R.
228W Westvaco Mineral Prods. Div.

Theophylline USP Anhydrous Powder .....For use in manufacture of preparations containing theophylline as the main ingredient and for the manufacture of solubilized mixtures. Data in Technical Information Sheet.
228X Mallinckrodt Chem. Wks.

Need some equipment?

Then you'll find this issue's Inventory of New Equipment right up your alley. It's a digest of the past year's major new developments in process equipment, the first complete roundup of its kind. You'll find it a handy tool for years to come (p. 123).

b,b'-Thiodipropionitrile.....Presents Technical Data Sheet which contains information on appearance and color, stability, solubility, uses and chemical properties, toxicity and safe handling instructions, etc.
228Y Monsanto Chem. Co.

Thioureas.....Makes available a Report on the use of diethylthiourea and dibutylthiourea for inhibition of HCl, H_2SO_4, HF, H_3PO_4, $(COOH)_2$ and CO_2-brine and H_2S-brine systems. Request Sharples Report 53-3.
228Z Sharples Chem.

Thixcin.....A fine white powder that swells in aliphatic solvents & most oil-based compositions to form a loosely knit lattice structure of tremendous supporting power. Offers sample & technical information.
228AA Baker Castor Oil Co.

Titanium Hydride.....Features numerous uses: ceramic-metal seals; electronic getter; furnace atmosphere; hydrogenation agent; refractories; etc. For complete product information, request Bulletin No. 601.
228BB Metals Hydrides.

o-Tolidine.....A light tan solid soluble in alcohol, ether and dilute hydrochloric acid. It may contain up to 0.3% ash and traces of insolubles in 10% hydrochloric acid as impurities. Makes available free sample.
228CC E. I. du Pont de Nemours.

2, 4-Tolylenediamine.....A light tan to brown crystalline solid, very soluble in alcohol, ether and boiling water. It may contain up to 0.1% water insolubles and 0.2% ash as impurities. Company offers a free sample.
228DD E. I. du Pont de Nemours.

Tolylene Di-Isocyanate.....Nacconate 80 —isomeric mixture of 80% 2,4-tolylene di-isocyanate and 20% 2,6-tolylene di-isocyanate. Product samples, detailed technical information and quotations available upon request.
228EE National Aniline Div.

Tri-N-Amyl Borate.....Presents descriptive information; molecular weight; density; boiling point; flash point; color; odor; solubility in organic solvents; stability in water; etc. Technical Data Sheet No. 3/OB.
228FF Pacific Coast Borax Co.

Tri-N-Butyl Borate.....Covers formula; molecular weight; % boron, B; density; boiling point; flash point; color; odor, solubility in organic solvents; stability in water; etc. Technical Data Sheet No. 2/OB.
228GG Pacific Coast Borax Co.

Tri-o-Cresyl Borate.....Covers formula, molecular weight, density, boiling point, flash point, color, odor, solubility in organic solvents, stability in water, etc., in Product Technical Data Sheet No. 8/OB.
228HH Pacific Coast Borax Co.

Tricresyl Phosphates.....For permanence and non-flammability—in combination with any plastic resin. Offers technical literature and information regarding advantages to be had by using different types of Kronitex.
228II Ohio-Apex Div.

Triethanolamine.....Offers one of the widest ranges of uses for emulsions & other chemical processing fields. 44 p. booklet, "Aliphatic Nitrogen Compounds," covers physical properties, specifications, etc.
228JJ Carbide & Carbon Chem.

Triethyl o-Formate.....A unique ester, closely resembling an acetal, stable in the presence of alkali, unstable in the presence of acid, and a source for the ethoxy methylene group. Technical Bulletin upon request.
228KK Kay-Fries Chem.

Trimethyl Borate.....A Technical Data Sheet is now available which covers: molecular weight; % boron, B; density; boiling point; flash point; color; solubility in organic solvents; etc. Request No. 1/OB.
228LL Pacific Coast Borax Co.

*From advt., this issue

Trimethylolethane.....New polyol for short oil alkyds. TME alkyds excel in: soap and alkali resistance; retention of color and gloss; heat stability; durability; etc. Supplies samples and Technical Bulletin.
229A Heyden Chem. Corp.

2,4,7-Trinitrofluorenone.....Furnishes valuable data on 2,4,7-trinitrofluorenone...a new reagent for the identification & separation of polynuclear hydrocarbons & their derivatives. Request Data Sheet.
229B Dajac Labs.

Tris(Hydroxymethyl) Aminomethane..... See what highly reactive nitroparaffin ("Tris Amino") derivative can do for you—the only tri-hydroxy molecule commercially available having a primary amine group. Data & samples.
229C Commercial Solvents Corp.

Uranium.....New edition of "Mesa Miracle" describes fast-growing uranium industry on the Colorado Plateau. Includes up-to-date figures on number of uranium mines now in operation & the people employed. 36 p.
229D U. S. Vanadium Co.

Urea.....Urea and anhydrous ammonia for industry and agriculture. Company's new $20,000,000 plant near Memphis, Tenn., is progressing rapidly toward completion. Fully illustrated Brochure offers complete data.
229E Grace Chem. Co.

Urea, Crystal.....Purity and uniformity make it ideal for use in a large number of products and processes. Furnishes full details—specifications, chemical and physical properties, suggested uses, etc.
229F E. I. du Pont de Nemours.

Urea Peroxide..... Company makes available upon request a literature reference describing line of urea peroxide. Included is information on chemical and physical properties, uses and handling. Product Bulletin No. 10.
213y *Buffalo Electro-Chem. Co.

Vermiculite.....Over 40 industrial applications of vermiculite are listed in 1955 revision of Data Book on the mineral's chemical and physical properties. Request this fully-illustrated, 16 p. reference.
229G Zonolite Co.

N-Vinyl-2-Pyrrolidone.....Will copolymerize with almost all vinyl monomers. Permits modification of many properties in existing homopolymers. Request technical information, price schedules and product samples.
229H General Aniline & Film Corp.

Vitamin A.....36 p. illustrated, Spiral-bound Technical Brochure describes Roche dry vitamin A acetate. Covers biological availability, particle sizes, physical properties, analytical methods, assays, etc.
229I Hoffman-La Roche.

Vitamin B_1.....Makes available Technical Information Sheet covering thiamine hydrochloride USP powder (vitamin B_1). White crystalline powder: very slight yeast-like or putty odor. Uses, containers, etc.
229J Mallinckrodt Chem. Wks.

Vitamin B_{12}.....A dark red, crystalline powder; practically odorless & tasteless. Uses—as anti-anemia factor in treatment of pernicious anemia, tropical & non-tropical sprue, etc. Technical Information Sheet.
229K Mallinckrodt Chem. Wks.

Vitamin E.....Compiles bibliography about vitamin E in chicken nutrition. Covers such items as sources of vitamin E in poultry feeds, the chicken requirements and the symptoms of vitamin E deficiency, etc.
229L Distillation Products Ind.

Wax Removers.....Makes available reprint entitled, "Wax Removing Floor Cleaners." Includes: properties of a remover; dispersing action; hard water tolerance; use of non-ionics; viscosity; etc. No. F-8827.
229M Carbide & Carbon Chem.

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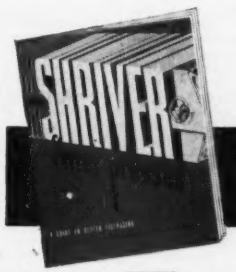

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Chemicals

Waxes—Zirconium Hydride

Waxes.....Manufacturers of rubbing compounds, waxes, lamb wool products, automotive finishing & refinishing specialties offer fully illustrated folder covering numerous advantages of Mirroriz auto paste wax.
230A Kammel Products Corp.

Waxes.....22 p. Booklet covers grades available, chemical & physical properties, compatibility, & uses for carnauba wax, candelilla wax, japan wax, ceresine waxes, montain wax, ouricury wax, palm waxes, etc.
230B Frank B. Ross Co.

Waxes, Microcrystalline.....Company makes available fully detailed information on microcrystalline and synthetic waxes, in various technical booklets, bulletins and price lists. All obtainable on request.
230C Petrolite Corp.

Waxes, Petroleum.....Cardis One is the hardest emulsifiable petroleum wax on the market. It gives the luster and lasting brilliance only wax-rich emulsions can create. Request literature and product samples.
230D Warwick Wax Co.

Waxes, Synthetic.....Armowax is useful in any application requiring a high-melting (132°C—275°F) wax, that possesses good initial color and heat-color stability. Provides detailed information and samples.
230E Armour Chem. Div.

Weed Killers, Borate.....Service Bulletin describes Tronabor as a non-poisonous, non-corrosive borate weed killer that permanently sterilizes soil beneath a paved surface. Provides complete information.
230F American Potash & Chem.

p-Xylene 95%.....Important chemical may be oxidized to terephthalic acid, a new dibasic acid useful as chemical intermediate and in the production of polyesters, polyamides and other high polymers. Complete data.
230G Oronite Chem. Co.

Zinc Dust.....Zinc dust as a reducing agent offers valuable advantages: original cost lower than most commonly used agents; works in alkaline & acidic solutions of varying pH; etc. Furnishes half-pint sample.
230H Federated Metals Div.

Zinc Formate, Crystal, Purified . . . . . Makes available an informative Data Sheet which gives pertinent details concerning physical and chemical properties, suggested uses, containers, etc. No. DA-44441.
201af *Baker & Adamson

Zinc Stearate USP Grade A Powder..... An ingredient contributing smoothness, unctuousness and covering powder to pharmaceutical and cosmetic preparations. Find complete details in Technical Information Sheet.
230I Mallinckrodt Chem. Wks.

Zirconia, Stabilized.....Finds successful usage in refractory, ceramic, electrical & abrasive fields. Pertinent information on chemical & physical properties & suggested uses in descriptive Folder.
230J Zirconium Corp. of America.

Zirconium.....Numerous important uses—acid-resistant materials, corrosion-resistant materials, electronic getter, scavenger, etc. Furnishes pertinent technical data on company product line in Bulletin 700.
230K Metal Hydrides.

Zirconium.....66 p. booklet, "Facts About Zirconium," offers information concerning the history and production of zirconium. Covers data on mechanical, physical and chemical properties, fabrication, etc.
230L Carborundum Metals Co.

*From advt., this issue

Zirconium.....Zirconium Technical Information Survey designed to introduce this material and some of its outstanding properties. Sections include: general corrosion information; approximate strength; etc.
230M Firth Sterling.

Zirconium Hydride.....Metallic dark grey powder. Dissociates in vacuum above 500°C. Important uses: ceramic-metal seals; electronic getter; hydrogenation agent; etc. Find complete details in Bulletin No. 701.
230N Metal Hydrides.

Construction Materials

Adhesives.....Company furnishes a valuable booklet describing typical starting formulations, properties, and methods of application of "Thiokol" liquid polymer/liquid epoxy resin adhesives. 16 p.
230O Thiokol Chem. Corp.

Adhesives.....Profusely illustrated, 16 p. includes sections on: custom compounding; new problems; industrial products; products for defense; shoe adhesives; technical facilities; and service and representatives.
230P Angier Products.

Adhesives.....Company makes available a new Technical Data Sheet which describes the physical properties and installation characteristics of "3M" brand ceramic tile adhesive (CTA-12) for installing floor tile.
230Q Minnesota Mining & Mfg.

Adhesives, Epoxy Resin.....Announces a 16 p. Brochure containing the very latest technical data and price information on company's line of epoxy resin adhesives . . . for those difficult bonding problems.
230R Armstrong Products Co.

Adhesives, Epoxy Resin.....Company has undertaken active manufacture & development of epoxy adhesive formulations. Furnishes literature covering type & description, typical functions, etc. Bulletin EP-54-33.
230S Furane Plastics

Adhesives, Lagging.....20 p. covers data on lagging adhesives, sealers, surface coatings, fire retardant mastics and vapor barriers. Includes full technical product information. Reference Manual No. 545.
230T Benjamin Foster Co.

Adhesives, Laminating.....Announces the availability upon request of a three-color, profusely illustrated manual on laminating adhesives . . . for film, foil, fabric and other web laminates. 12 p. Manual No. 110.
230U Rubber & Asbestos Corp.

Adhesives, Pressure Sensitive.....Pressure sensitive adhesives—normally used in form of adhesive tapes—have recently attained considerable industrial importance. Full details in Bulletin No. P-12-62-1-5-54.
230V Harwick Standard Chem.

Adhesives, Resin Emulsion.....Company issues a new Folder which lists over dozen Darex resin adhesives. Reference tells what they are, and where and how to use them. Included is a handy "Selection Chart." 4 p.
230W Dewey & Almy Chem. Co.

→Want more information on any of these items? Just write its code number on one of the postcards inside the back cover, then mail it to us. It's that easy now.

Alloys . . . . . Offers "Materials Selection Chart" . . . a 4 p. chart designed to assist in the selection of the most economical alloy for a given corrosive problem. More than 350 specific corrosives are included.
196e *Cooper Alloy Corp.

Alloys.....Illustrated, 24 p. describes Super Alloys—high strength heat & corrosion resistant materials. Used for critical parts of jet engines & other forms of gas turbines, turbo-superchargers, rockets, etc.
230X Universal-Cyclops Steel.

Alloys.....General information & technical data on vacuum-melted metals & alloys, as well as several commercial services now available in connection with such metals, included in Technical Bulletin No. VM-100.
230Y Carboloy Dept.

Alloys . . . . . Hastelloy alloys last for many years under severe corrosive conditions . . . they save time, money, and production time in all installations. Request copy of booklet describing Hastelloy line.
161 *Haynes Stellite Co.

Alloys.....Versatile special alloys fight wear, corrosion, impact, fatigue; give long life & dependable performance under the severest conditions. Literature on properties & uses in the process industries.
230Z Ampco Metal.

Alloys.....Tabbed, easy-to-use, 24 p. with latest copper & copper-alloy specifications—ASTM, ASME, AWS, SAE, AMS, Federal, Military, Army, Navy & Joint Army-Navy specifications. Pub. No. B-34-R.
230AA American Brass Co.

Alloys, Aluminum Casting.....New 60 p. "Aluminum Casting Alloys Handbook" consolidates all important specifications pertaining to these alloys—Federal, Navy, Military, SAE, AMS, ASTM & Federated. Illustrated.
230BB Federated Metals Div.

Alloys, Cast.....Technical Booklet covers major stainless alloys. Includes chemical composition, mechanical & physical properties, resistance to major corrosive solutions, machinability, heat treatment, etc.
230CC Cooper Alloy Foundry Co.

Alloys, Corrosion & Heat Resistant . . . . . Presents a valuable "Alloy Reference Chart" . . . a 6 p. pamphlet listing alloy designations, applications, properties & analysis of corrosion & heat resisting alloys.
196d *Cooper Alloy Corp.

Alloys, Fabricated.....Illustrated, 24 p. covers Rolock heat & corrosion resistant fabricated alloys. Contains photos of 74 baskets, trays, racks, retorts, fixtures, etc. Heat Treating Section Catalog No. B-8.
230DD Rolock, Inc.

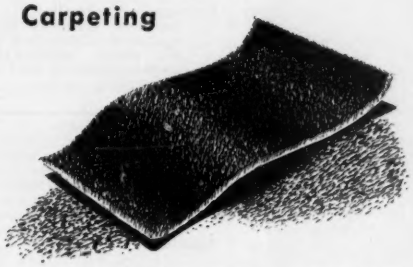
Alloys, Fabricated.....Illustrated, 28 p. Corrosion Resistant Section presents 102 baskets, crates, racks, tanks, sinks, shell case equipment, & "George" Rolock's tote box truck. Request Catalog No. B-9.
230EE Rolock, Inc.

Alloys, Hard-Facing.....Impart superior abrasion & corrosion resistance to finished metal parts. Spraywelder is a metal spraying unit for applying powdered Colmonoy alloys. Request Model C Spraywelder Catalog.
230FF Wall Colomoy Corp.

Alloys, Hard-Facing.....Illustrated, 44 p. Manual includes sections on: what metals can be hard-faced; how to select right rod; which welding process to use; properties; applications; etc. Reference No. F-7338C.
230GG Haynes Stellite Co.

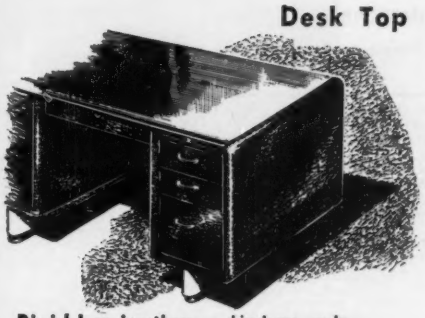
Alloys, Hardsurfacing.....Describes the chemical and physical properties of alloys . . . furnished either in form of hard surfacing weld rods, or in cast forms, made to the customers' specifications. Illustrated, 4 p.
230HH Coast Metals.

Carpeting



Flocking — Natural or synthetic fibres, ¼ to 1 mm. long, cemented to fabric, paper, rubber, plastics, metals, wood, etc. to produce the effect of pile, suede, velvet or plush.

Desk Top



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Construction Materials

Alloys, High Tungsten—Coatings, Protective

Alloys, High Tungsten.....New reference covers latest data on machinability & other physical properties of Hevimet, a high tungsten alloy—twice as heavy as lead—produced by powder metallurgy. Data Sheet HV-4.
232A Carboloy Dept.

Aluminum.....Process industry applications of aluminum for producing everything from beer to bomb shells are thoroughly analyzed in illustrated, 80 p. book, "Process Industries Applications of Alcoa Aluminum."
232B Aluminum Corp. of America.

Aluminum Building Wires & Connectors.....Reports an investigation to obtain information on building wires employing aluminum instead of copper as the electrical conductor. Data in Bulletin of Research No. 48.
232C Underwriters' Labs.

Asbestos.....Blue asbestos features unequalled properties for a wide range of industrial applications—smallest fiber diameter known, resists chemical attack, strongest of all fibers, etc. Bulletin No. 201.
232D North American Asbestos.

Asbestos.....For your most exacting insulation requirements. Tough—will not crack, crumble, powder. Designed for temperatures up to 1200°. Unaffected by water, vapor, fumes. Fully illustrated Brochure.
232E Union Asbestos & Rubber Co.

Asbestos Base Reinforcing Materials..... Illustrated, 48 p. describes three lines of asbestos base reinforcing materials which company introduced to low pressure branch of plastics industry. Bulletin T-55.
232F Raybestos-Manhattan.

Brick, Refractory.....36 p. on the use of periclase-chrome refractory brick to line cement kiln hot-zones. Offers technical data on brick, instructions for installation, ordering, shipping & handling, etc.
232G Kaiser Aluminum & Chem.

Building Maintenance Materials..... Save concrete floors—extend their life—with Stontop. Stops concrete "dusting" . . . helps prevent ruts & holes from forming . . . acid-grease & oil resistant. Offers 6 p. Folder.
232H Stonhard Co.

Castings.....Presents an illustrated 4 p. folder covering range (large to small) of electric furnace carbon and alloy steel castings. Includes a pictorial review of available product literature. Form No. 20-LP.
232I Farrell-Cheek Steel Co.

Castings.....Corrosion-resistant castings from created metals . . . to help solve your tough product design problems. Offers 40 years of experience in producing top quality castings. Descriptive literature.
232J Waukesha Foundry Co.

Castings, Alloy.....Presents 48 p. Bulletin for users and potential users of stainless and heat-resistant alloys in cast form. Complete details on industrial applications. Charts, photos, tables, etc. No. A-141.
232K International Nickel Co.

Castings, Centrifugal.....Boeing chose Lebanon . . . to make the stainless steel casting for the powerplant of a jet truck. The complete story of this and other centrifugal castings available in a 12 p. Brochure.
232L Lebanon Steel Foundry.

Castings, High Alloy.....Announces the availability upon request of an interesting series of case histories showing how advance foundry technics have brought new dimensions to the scope of high alloy castings.
232M Cooper Alloy Co.

Castings, High Alloy.....Duraloy high alloy castings to your order . . . large—small—special shapes—corrosion-resistant—heat resistant—abrasion-resistant—etc. Offers details in Bulletin No. 3354-G.
232N Duraloy Co.

Castings, Stainless & High Alloy..... Esco Spuncast for everything you require in stainless & high alloy castings. Detailed booklet can help you cut costs on hollow, circular, cylindrically shaped products.
232O Electric Steel Foundry Co.

Castings, Stainless Steel.....32 p. of valuable and complete information on stainless castings: analyses, properties, technical data on handling and heat treatment, typical applications, how to order, etc.
232P Allegheny Ludlum Steel.

Cements.....Baldwin-Hill Powerhouse cement . . . insulates and finishes. Company makes available a Bulletin which offers pertinent information on the composition, properties, efficiency, and low applied cost.
232Q Baldwin-Hill Co.

Cements & Coatings . . . . . Manufactures full line of corrosion-proof materials of construction & can offer corrosion service for all parts of your plant—protecting all types of equipment. Bulletin No. MCC-3.
211a *Atlas Mineral Products Co.

Cements, Insulating.....Super "66" insulating cement sticks to hot or cold surfaces—saves time, saves money. Contains a special rust inhibitive that prevents corrosion. Makes available a product sample on request.
232R Eagle-Picher Co.

Cements, Sulfur.....Acid-proof cements of "melt & pour" type—used for bonding acid-proof brick or tile & for sealing joints of bell-&-spigot pipe. Application, benefits, specifications, etc. Data Sheet No. CP-584a.
232S Pennsylvania Salt Mfg. Co.

Coating Systems, Protective.....Neoprene coating systems & a special modified vinyl system have joined up with 16 other Ucilon coating systems that stop hundreds of severe corrosives. Details in Bulletin No. MC-9.
232T United Chromium.

Coatings, Corrosion-Resistant.....Illustrated 8 p. covers Alcoplate—a chemical nickel-plating process which produces a superior protective surface of uniform thickness on metallic objects of almost any shape.
232U American Locomotive Co.

Coatings, Protective . . . . . Amercoat No. 87 will cut maintenance costs because one coat gives the thickness & protection previously available only thru application of multiple coats. Descriptive Bulletin.
145 *Amercoat Corp.

Coatings, Protective.....Ceramic coatings and procelain enamels—for all industrial applications—combat corrosion...resist abrasion...withstand high temperatures...offer special dielectric properties. 6 p.
232V General Ceramics Corp.

Coatings, Protective.....Reinforced asphaltic coatings provide many uses—rust prevention, vaporsealing thermal insulation, waterproofing building walls, dampening sound & vibration, etc. Booklet No. GM-100.
232W Insul-Mastic Corp. of Amer.

Coatings, Protective.....Covers uses & properties of Solaramic coatings—a family of proprietary ceramic coatings specially designed to protect high or low alloy steel fabrications from heat or corrosion. 8 p.
232X Solar Aircraft Co.

Coatings, Protective . . . . . Poly-Cell—the sprayable foam insulation—consists of individual tiny cell construction...one of the most convenient forms of insulation. Details in Bulletin No. P1.
291 *Insul-Mastic Corp. of Amer.

Coatings, Protective.....Issues a new detailed Bulletin on synthetic resin coatings. Described are vinyl, phenolic, saran, polyethylene, epon, neoprene, plastisol, and silicone coatings. Illustrated, 8 p.
232Y Metalweld, Inc.

Coatings, Protective.....Amorphous zinc phosphate coatings are smooth, dense and exceedingly adherent to the basic metals. Complete information on Ty-Bond, including features and application, in 4 p. Bulletin.
232Z Cowles Chem. Co.

Coatings, Protective . . . . . Sicon silicone coating withstands the shock of high heat combustibles without peeling or blistering. Retains luster & beauty over long periods of time. Full details in Bulletin No. 531.
328 *Midland Industrial Finishes.

Coatings, Protective.....Offer valuable features: chemical-weather-abrasion—resistant; elastic; tough & durable; etc. Covers instructions for use, specifications & specific resistance. Data Sheet No. CP-575.
232AA Pennsylvania Salt Mfg. Co.

Coatings, Protective.....Detailed Bulletin covers five types of vinyls, with complete primer requirements for all types of surfaces, including rusty steel and old coatings. Pertinent data on use. No. 200.
232BB Carboline CO.

Coatings, Protective.....Quick, easy, clean, low-cost way to get lasting coal tar protection against corrosion...in handy tape form. Full details of advantages, application, economy, etc. Illustrated, 8 p.
232CC Tapecoat Co.

Coatings, Protective . . . . . Technical Bulletins on protective coatings for chemical environments, present information on application, activation, preparation, priming, coverage, color, drying and resistance.
322 *Rowe Paint & Varnish Co.

Coatings, Protective.....Presents an illustrated discussion of the various types of asphaltic mastic protective coatings available for use on masonry, brick and concrete sidewalls, roofs, etc. 4 p. Pamphlet.
232DD Emjay Maintenance Engrs.

Coatings, Protective.....Illustrated Bulletin provides data on durable & protective baked-on phenolic resin coatings...for steel & other metals. Includes full description, applications, features, etc. 8 p.
232EE Lithcote Corp.

Coatings, Protective.....12 p. illustrated Bulletin describes Lastiglass . . . a thermosetting resin base coating for all types of process equipment including tanks, piping, filter press equipment, etc.
232FF Bishopric Products Co.

Coatings, Protective.....Covers Dip-Pak hot-melt plastic coatings. Lists the types, including base plastics, colors, physical properties, corrosion resistance, melting and application temperatures for each. 4 p.
232GG Fidelity Chem. Prods. Corp.

Coatings, Protective.....Fluorinax is a new resin-based coating fundamentally derived from the polymerization of fluorine monomers. Complete description & properties in Technical Service Data Bulletin FLX.
232HH Rubber & Plastics Comp.

Coatings, Protective.....Arco experienced manpower—advanced methods—superior materials . . . assembled to combat corrosion in every phase of industry. Examples of protection in fully illustrated, 4 p. Folder.
232II Automotive Rubber Co.

Coatings, Protective.....Gives complete information on base formulation... adhesion . . . abrasion resistance . . . chemical characteristics . . . film thickness & cost. Find details in 8 p. Brochure No. 150.
232JJ Ceilcote Co.

*From advt., this issue

Coatings, Protective.....Prufcoat "A" Hot-Spray Vinyl gives greater mil thickness, improved film density, & better adhesion at lower cost per sq. ft. of surface. Valuable features, properties, etc. in Bulletin 240.
233A Prufcoat Labs.

Coatings, Protective.....Prufcoat Gloss Vinyl Mastic is perfected vinyl base mastic with exclusive "gloss" finish that substantially improves chemical resistance, gives measureably better appearance. Bulletin 260.
233B Prufcoat Labs.

Coatings, Protective.....Describes pressure-packed protective coatings—rust preventive coatings, instant dry enamels, instant paint remover, window glass paint—in time-saving, trouble-free spray cans. 4 p.
233C Wilbur & Williams Co.

Coatings, Protective.....Flexible, unplasticized, single package, pigmented, fast drying furan base resin coating. Resistance to acids, alkalies, solvents to temperatures as high as 190°F. Bulletin 400.
233D Carboline Co.

Coatings, Protective.....Pennpaint 20 developed to meet industry's need for a corrosion-resistant coating of wide usefulness. Includes application, advantages, specifications, etc., in Data Sheet No. CP-587.
233E Pennsylvania Salt Mfg. Co.

Coatings, Protective.....Presents comprehensive information on a complete line of corrosion-proof linings, bricks, bonding cements, protective coatings and mastic floors. Covers details in Catalog No. G-201.
233F Cellcote Co.

Coatings, Protective.....For any equipment or surface that can be uniformly baked . . . Plastisol compounds offer easy, economical way to apply long-lasting vinyl coating protection. Details in Bulletin No. VP-1.
233G United Chromium.

Coatings, Protective.....Booklet offers essential information on the advantages and technical properties of Alcoplate coatings, together with a review of Alco's experience and facilities in nickel plating. 8 p.
233H Alco Products.

Coatings, Protective.....Inertol protection means lower cost per year. "A Panoramic View of Inertol Paints" shows use in sewage treatment works, pools, industrials, water treatment plants, etc. Illustrated.
233I Inertol Co.

Coatings, Protective.....Now...your own painter can "cold-galvanize" any steel surface with Dimetcote (100% inorganic zinc coating)...any place—anywhere—anytime. Request Dimetcote Technical Bulletin.
233J Amercoat Corp.

Coatings, Protective.....The "Amercoat 33/86 System" has proven amazingly helpful...to control corrosion where only minimum surface preparation is possible. For details, request descriptive literature.
233K Amercoat Corp.

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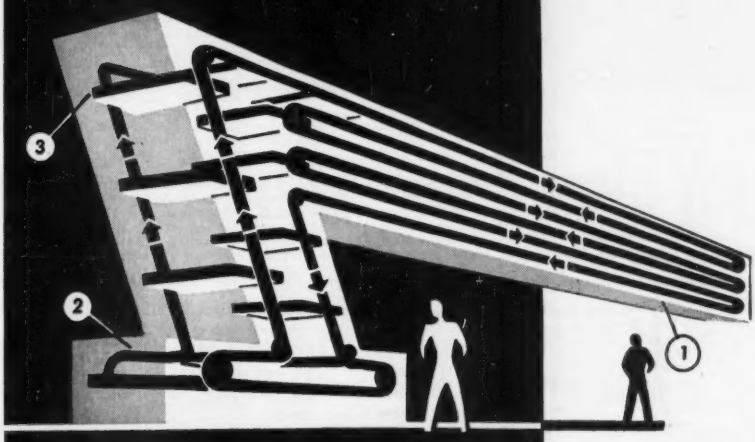

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Construction Materials

Coatings, Protective, cont.—Insulation, Pipe

Coatings, Protective.....Releases a new reference on protective coatings. Included are neoprene heavy duty, neoprene extra heavy duty, styrene, chlorinated rubber & epoxy resin based coatings. Bulletin No. 7-2.
234A Atlas Mineral Products Co.

Coatings, Protective.....Del protective coatings are designed to do specific jobs in the chemical process industries on new construction, maintenance and products finishing. Describes line in 12 p. Bulletin.
234B David E. Long Corp.

Coatings, Protective.....Describes "Alodine" No. 1200—the ACP metal-protective process that enhances aluminum's natural corrosion-resistance and vastly improves its paint-bonding properties. 4 p. Folder.
234C American Chem. Paint Co.

Coatings, Protective, Odorless.....Destroy odor problems heretofore created by chemical-resistant painting—provide highest resistance to acids, alkalies & other chemicals. Easy-to-apply & in a variety of colors. Bulletin 250.
234D Prufcoat Labs.

Coatings, Resin Base.....For the chemical industry. Specific applications include tank cars, oil pipe, acid tanks, shipping containers, etc. Tabulates effects of chemicals on vinyl resin-base coatings. 8 p.
234E Bakelite Co.

Copper.....By using copper and its alloys, brass and bronze, your product is easier to fabricate, better and more durable. Literature includes a valuable booklet, "Copper . . . Today and Tomorrow."
234F Copper & Brass Research.

Electric Furnace Shapes.....Information on electric furnace refractories —cores, tubes, muffles—of Alundum or Crystolon materials. Tells how to construct electrical furnaces for laboratory. Bulletin No. 458.
120-1d *Norton Co.

Electrodes, Welding.....Illustrated, 24 p. Bulletin on stainless steel welding electrodes. Covers metallurgy of stainless steels provides A. O. Smith stainless steel electrode selector table, etc. No. WE-166.
234G A. O. Smith Corp.

Fabrication, Metal.....Complete fabricating and assembling facilities for any type, size and quantity of sheet and plate products and weldments thru ¾" thickness. Offers details in "Sheet and Plate Fabrication."
234H Kirk & Blum Mfg. Co.

Fabrication, Metal.....Booklet, "Facilities & Products," with information & photographs which show why company can turn out—at low cost—specialized heavy equipment for chemical plants, available upon request.
346-71 *Newport News Shipbuilding.

Fabrication, Metal.....Manufactures metal products for many industrial uses . . . from complete carbon-black plants to steel conveyor boxes. Designs, engineers and fabricates to specific needs. Full data.
234I Boardman Co.

Fabrication, Plate.....Company is thoroughly experienced in working and welding numerous alloys and clad materials, as well as the carbon steels and stainless steels. For complete details, request Bulletin PF.
234J Dowington Iron Wks.

Fabrication, Process Equipment.....Engineers and fabricators of equipment in stainless steel, monel, aluminum, and alloy steels for the chemical, textile, paper and food industries. Illustrated, 4 p. Bulletin.
234K Process Equipment Co.

Fabrication, Process Equipment.....If your process involves high pressures, high temperatures or corrosive materials, design with Multi-Layer. Descriptive Bulletins provide complete information.
234L A. O. Smith Corp.

Fabrication, Process Equipment..... Fabrication of vessels, agitators or precision machinery . . . to engineering, design & construction of process units or entire industrial chemical plants. Offers Bulletins.
234M Industrial Process Engrs.

Fabrication, Process Equipment..... Bulletin outlines company's broad services: design & construction of process plants & process units; design &/or fabrication of special processing equipment; etc. 4 p.
234N Badger Mfg. Co.

Fabrication, Process Equipment.....16 p. fully illustrated Brochure describes in detail the facilities and capabilities of the company's plant and also outlines the various types of products which are manufactured.
234O Bishopric Products Co.

Fabrication, Process Equipment.....Designed and built around the use of Haveg—basic construction material that resists corrosion. Complete information in fully illustrated Bulletins Nos. F-6 and C-12.
275a *Haveg Corp.

Fabrication, Process Equipment..... Complete modern facilities including X-ray inspection & stress relieving which insure quality control. Equipment in all commercial metals & alloys. Catalogs 501 & 550.
234P L. O. Koven & Bro.

Fabrication, Process Equipment.....8 p. Bulletin outlines use of Type 1 polyvinyl chloride in fabrication of exhaust systems, process equipment & processing tanks. Includes section on plastic pipe & fittings.
234Q Atlas Mineral Products Co.

Fabrication, Stainless Steel.....Feature the techniques of fabricating equipment with round corners for efficient service—round corners are stronger . . . easier to clean. Guide provides complete information.
234R S. Blickman, Inc.

Fabrication, Steel & Alloy Plate..... Illustrated 48 p. describes the facilities and workscope of large fabricator—offering the latest techniques in custom fabrication of steel and alloy plate. Catalog 554.
234S Nooter Corp.

Fabrication, Storage Tank.....Presents Catalog dealing with storage tanks & steel plate fabrication. Features material specifications, tank design data, foundation recommendations, etc. Illustrated. No. 54B.
234T Hammond Iron Wks.

Fabrication, Weldment.....Photos of unusual applications of welded fabrication featured in Brochure. Among the weldments shown are complex rotors, housings, bases, machinery frame members, shells, etc.
234U Acme Welding.

Film, Polyester.....Features an unusual combination of physical, electrical, chemical, & thermal properties. Offers complete details in 20 p. illustrated, "New Developments in 'Mylar' Polyester Film."
234V E. I. du Pont de Nemours.

Finishes, Maintenance.....Company issues a painting specifications and product guide which features a two-page Selector Chart for correct matching of all types of maintenance finishes to surfaces.
234W Glidden Co.

Flooring, Concrete.....Designed to resist heavy impact & abrasive action of rolling & skidded vehicles . . . new iron-chip seeding process bonds a non-spalling, non-slip armor to rugged Dynapakt concrete topping.
234X Flash-Stone Co.

Flooring, Safety.....Describes product developed to meet the requirements of hard surface safety flooring in the industrial and ordnance fields. Covers numerous advantages and features in Technical Bulletin 38.
234Y Master Builders Co.

Floors, Corrosion-Proof.....Illustrated reference describes Nukem corrosion-proof acid brick floors. Covers requisites of a corrosion-proof floor, specification, users, etc. A. I. A. File No. 3-B No. 3-F-11 (NN).
234Z Nukem Products Corp.

Graphite.....20 p. tells about growing significance of graphite in electrometallurgy & electrochemistry, & outlines reasons why Electrode Division has made such steady progress as a supplier. Illustrated.
234AA Great Lakes Carbon Corp.

Grout & Mortar, Pre-Mixed.....Offers 2 illustrated folders covering pre-mixed grout (8 p.) & pre-mixed mortar (4 p.). Fully describes advantages & gives directions for use in performing numerous applications.
234BB Master Builders Co.

Heads, Stainless Steel.....File Folder provides useful data on stainless steel heads, either press formed or spun. Handy pocket holds latest price lists for heads carried in stock. Request valuable literature.
234CC G. O. Carlson, Inc.

Hoods, Tank.....Pla-Tank—molded from long-life, resin-bonded glass fibre laminate—resistant to wide variety of fumes and temperatures. Light weight, easy to install, competitively priced. Data Sheets.
234DD Chemical Corp.

Insulation.....Describes Mono-Block—the one-block insulation for temperatures up to 1700°F. Bulletin includes information on composition, properties, efficiency, and low applied cost. Fully illustrated.
234EE Baldwin-Hill Co.

Insulation.....Carey magnesia insulations defy vibration, humidity, heat. Company's line includes insulation for sub-zero to 2500°F service. Detailed Catalog furnishes complete technical and application data.
234FF Philip Carey Mfg. Co.

Insulation, Block.....Eagle-Picher PV Supertemp block insulation . . . with the new "precision-finish." A highly efficient, all-purpose insulating block that is practically dustless. Offers product sample.
234GG Eagle-Pitcher Co.

Insulation, Cellular Glass.....New Brochure tells how the use of Foamglas solved severe insulating problems of leading users. Shows application to insulate roofs, ceilings, walls and floors, etc. Fully illustrated.
234HH Pittsburgh Corning Corp.

Insulation, Industrial.....No matter where your insulation job may be—Armstrong can give you efficient, well-integrated, on-the-job service from original specs to final installation. Descriptive Booklet.
234II Armstrong Cork Co.

Insulation, Pipe.....Presents a fully illustrated Folder covering Vapo-Wall low temperature pipe insulation. Includes complete description, properties, advantages, installation, ordering information, etc.
234JJ MMM, Inc.

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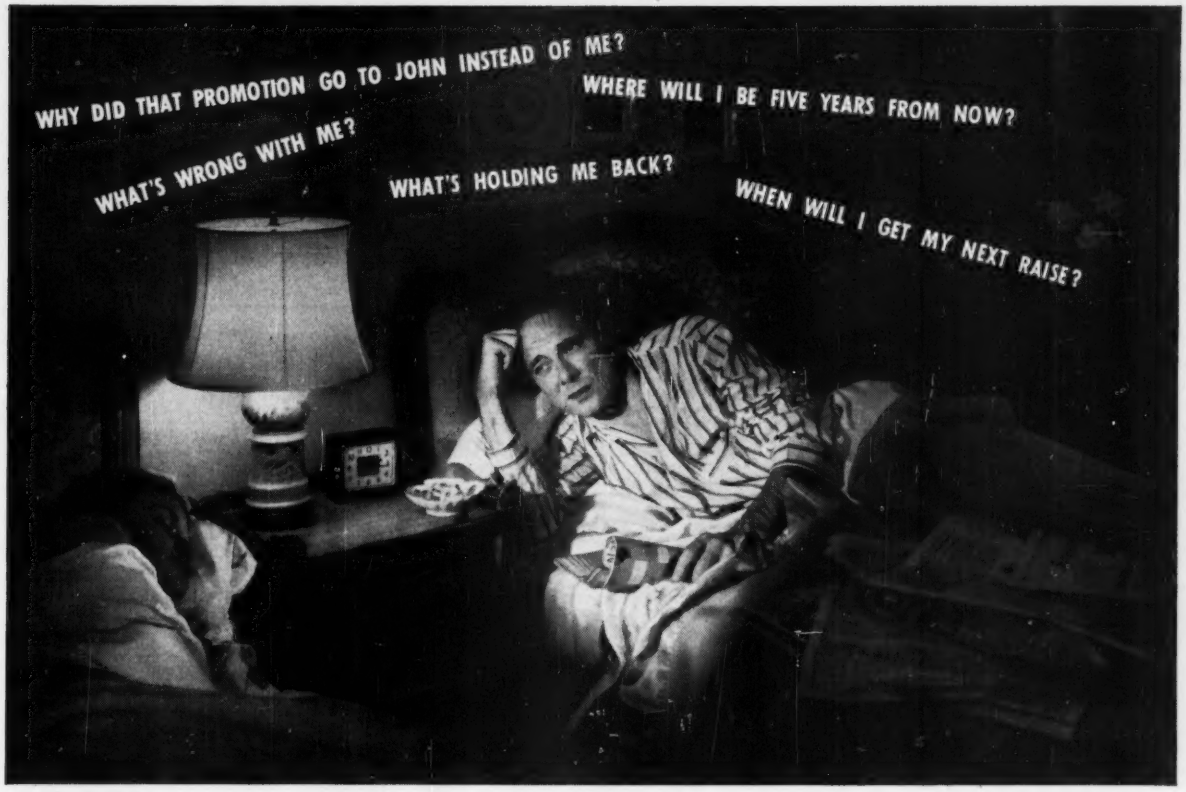
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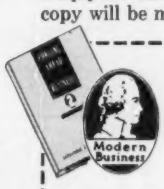

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Construction Materials

Insulation, Pipe, cont.—Steels, Stainless

Insulation, Pipe.....Amosite...the South African asbestos with long, strong, resilient fibers gives Unibestos pipe insulation greater strength and superior insulating ability. Information in Bulletin No. 109C.
234A Union Asbestos & Rubber Co.

Insulation, Pipe.....Lower heat losses, lower cost with new Snap*On glass fiber pipe insulation. Available in sizes that will fit pipe from ¼" to 33" nominal diameter, inclusive. Request Technical Bulletin SO-55.
236B Gustin-Bacon Mfg. Co.

Insulation, Refractory-Fiber.....6 p. describes Thermoflex—multi-purpose refractory-fiber felt for service to 2000 F. Covers the "K" factor, sound absorption qualities, chemical & thermal stability, etc.
236C Johns-Manville.

Irons, Engineering.....28 p. basic reference compiled primarily for design engineers offers the many valuable characteristics of modern nickel cast irons & illustrates acceptance in industry. Bulletin No. A-69.
236D International Nickel Co.

Jacketing, Aluminum.....Light-weight, weatherproof aluminum jacketing arrives on the job in convenient rolls 4 feet wide and 100 feet long...easy for one man to handle. Provides valuable engineering data.
236E Childers Mfg. Co.

Laminates, Resin-Bonded.....Pla-Tank resin-bonded laminate products for chemical-resistant service in metal finishing & chemical process industries. Data sheets cover tanks, pipe, ducts, hoods, stacks, etc.
236F Chemical Corp.

Lead Products.....For efficient control of corrosives. Provides all common mill shapes, sizes and forms...sheet, pipe, fittings, valves. Find complete details in reference, "Chemical Lead Products."
236G National Lead Co.

Lead Products.....Illustrated, 44 p. compilation of data on lead & lead products. Covers advantages of lead as construction material & describes grades, sheet lead, lead pipe & fittings, etc. Bulletin No. 162.
236H Federated Metals Div.

Linings, Drum.....Unichrome drum linings deliver resilient, seam-free, pore-free protection against such materials as acids, alkalies, salt solutions, alcohols, detergents, etc. Descriptive Bulletin No. DL-2.
236I United Chromium.

Linings, Protective.....Liquid neoprene base protective linings feature excellent chemical resistance and mechanical properties. Covers application instructions and specifications in Data Sheet No. CP-578.
236J Pennsylvania Salt Mfg. Co.

Linings, Rubber.....Company presents a fully illustrated, 2-color Bulletin which describes the advantages and application of rubber lining to steel tanks, drums, pipes, valves, fittings and pumps. 8 p.
236K Metalwald, Inc.

Masonry, Corrosion-Resistant.....'How to Build an Acid-Proof Brick Floor" & "Corrosion-Resistant Masonry Construction Guide" offered for those concerned with any type of corrosion-resistant masonry.
236L U. S. Stoneware Co.

Metal Specialties.....Complete service on metal specialties. Crates, trays, racks, baskets, etc.—designed and built for specific materials handling, heat-treat and corrosion resistant end use. Detailed Catalog.
236M Cambridge Wire Cloth Co.

Molding Materials.....Terminal blocks with exceptional strength, both electrical & mechanical, are being molded for U. S. Navy from Cyanamid's new Melmac Molding Material 3135. Product samples & literature.
236N American Cyanamid Co.

Mortars, Corrosion-Resistant.....Bulletin provides valuable data on line of Delrac furane cement & polyester cement. Covers chemical resistance, physical properties, instructions for use, etc. 4 p. No. 500.
236O Delrac Corp.

Mortars, Corrosion-Resistant.....Chemical-resistant cement mortars...for bonding and pointing corrosion-proof masonry construction. Covers applications, selection, ordering, etc. in Data Sheet No. CP-602.
236P Pennsylvania Salt Mfg. Corp.

Paints, Metallic Zinc.....Institute announces the availability of an informative, detailed booklet which contains complete facts on MZP—metallic zinc paint—for structural steel and galvanized surfaces.
236Q American Zinc Institute.

Paints, Protective.....Proven successful against all forms of corrosion (corrosive fumes, condensates and spillage). Includes performance record with over 175 corrosives in detailed Bulletin No. 750.
236R U. S. Stoneware Co.

Panels, Structural.....Describes Daycor —the new, translucent fiberglass building panel. Illustrates the numerous uses . . . as office partitions, shower enclosures, carports, patio covers, awnings, etc.
236S Strick Plastics Co.

Panels, Wall, Insulated Metal.....Supplies descriptive, technical data, specifications & construction details. Valuable features; superior thermal qualities economical permanent; flexible; etc. 8 p.
236T Steelcraft Mfg. Co.

Plastics.....Kel-F plastic offers solution to plant equipment corrosion problems. Fluorocarbon plastic inert to virtually all chemical attack—mineral acids, oxidizing agents, caustics, etc. Complete details.
236U M. W. Kellogg Co.

Plastics.....'The Silent Treatment" covers vermiculite acoustical plastic & its application. Contains a table of physical data, standard specifications for manual & machine application, etc. Numerous photographs.
236V Vermiculite Institute.

Plastics, Laminated & Molded.....Announces the availability upon request of a new 12 p. illustrated bulletin which describes more than thirty-five different types and grades of Insurok laminated and molded plastics.
236W Richardson Co.

Plastics, Reinforced.....Reinforced plastic materials widely used for sports car bodies, boats, modern furniture, etc. Other new uses for reinforced plastics contained in reference, "A Sketchbook of Profitable Products."
236X Monsanto Chem. Co.

Plastics Stamping.....Company makes available an 8 p. pamphlet which describes the tecniques of stamping out products from rigid vinyl on conventional metal stamping equipment. Request "Plastics Stamping."
236Y B. F. Goodrich Chem. Co.

Plate, Stainless Steel.....When your blueprint calls for stainless steel plate, you'll want material of highest quality, produced by specialists in the field—G. O. Carlson, Inc. Request weekly stock lists.
163 *G. O. Carlson, Inc.

Platinum, Gold & Silver.....Company makes available two informative Folders—Folder No. C-20, "Platinum, Gold & Silver for Science, Industry & the Arts," & Folder No. C-21, "Platinum & Palladium Catalysts."
236Z American Platinum Wks.

Platinum & Palladium, Electroplated.....For each metal, Data Sheet describes physical properties, from atomic weight to reflectivity, & electrical properties, from resistivity to specific magnetic susceptibility.
236AA Technic, Inc.

Polyvinyl Materials.....Company makes available technical information about their line of Geon materials and how they can be made into products that resist abrasion, heat, cold, oil, gas, and numerous chemicals.
236BB B. F. Goodrich Chem. Co.

Preventives, Rust.....Illustrated, 24 p. offers outstanding treatise on rust prevention. Catalog features 98 color chips of products & includes instructions for surface preparation & application. Form No. 254.
236CC Rust-Oleum Corp.

Primers.....Prufcoat Fast-Dry Primer P-50 offers advantages of finest universal metal primer on market, & in addition enables a complete coating job, from primer-to-top coat, in one day. Data in Bulletin No. 016.
236DD Prufcoat Labs.

Refractories.....Illustrated, 24 p. offers latest physical & chemical properties on Super refractories. Included are lists of applications & pertinent charts & tables. "Properties of Super Refractories."
236EE Carborundum Co.

Refractories.....No other refractory is so chemically stable at such high temperatures under both oxidizing and reducing conditions. Includes fully detailed information on properties in Bulletin No. 1741.
120-1c *Norton Co.

Refractory Grain.....24 p. reference, "Norton Refractory Grain," offers many charts, tables and photographs in color—a wealth of information on nature, performance, and application of refractory grains.
236FF Norton Co.

Rubber, Silicone.....Super tough silicone rubber provides outstanding features: high tear strength; improved oil resistance; low compression set; excellent thermal stability. Bulletin contains full details. 4 p.
236GG General Elec. Co.

Rubber, Sponge.....Arco-Cel natural and synthetic closed-cell sponge rubber is unique in structure and versatile in application. Includes advantages, specifications, a chemical resistance table, etc., in illustrated, 4 p.
236HH Automotive Rubber Co.

Shapes, Extruded.....Describes new hot extruded shapes offered in stainless, tool steels, high temperature alloys and other steels. Covers advantages in costs—in time—in availability—in quality. Illustrated.
236II Allegheny Ludlum Steel.

Sheets, Galvanized.....For industrial roofing & siding. Offer low initial, application, & per-year costs; the strength of steel; rust protection of zinc; etc. Descriptive booklet presents complete information.
236JJ American Zinc Institute.

Steels.....Publication furnishes 16 p. of essential information covering the proper selection & application of principal AL special alloy products: stainless, tool & electrical steels & sintered carbides.
236KK Allegheny Ludlum Steel.

Steels.....Company presents descriptive reference, "Guide to Selection of Fastest Machining Steels," which includes revolutionary new leaded carbon and alloy steels. Illustrated Bulletin—Ryerson 99-1.
236LL Joseph T. Ryerson & Son.

Steels, Alloy.....Announces a new steel which will enable you to improve the performance, lengthen the life, and reduce the cost of industrial equipment. Descriptive Booklet contains the full story of T-1 steel.
236MM U. S. Steel Corp.

*From advt., this issue

Steels, Clad.....56 p. fully illustrated book furnishes valuable information on stainless clad, nickel clad and monel clad steels. Discusses manufacture, specification, thermal conductivity, corrosion, etc.
237A Colvilles Ltd.

Steels, Stainless . . . . . Covers superior stainless steel sheets, strip, bars, plates, wire, forgings, etc. Data in informative 44 p. booklet, "Making the Most of Stainless Steels in the Chemical Processing Industry."
237B Crucible Steel Co.

Steels, Stainless . . . . . "Blue Sheets"—an individual Blue Sheet, which contains certified laboratory information on physical and chemical properties, etc. is available on each grade of AL Stainless Steel.
39a *Allegheny Ludlum Steel Corp.

Steels, Stainless.....Offers complete description of Carpenter Stainless No. 20 & No. 20-Cb in revised Catalog. Includes latest data on steel's corrosion resistance, applications, working characteristics. 20 p.
237C Carpenter Steel Co.

Steels, Stainless.....124 p. case-bound Handbook will help you to select right stainless steel & to use it properly. Furnishes comprehensive listings of analysis, properties & characteristics of each type.
39d *Allegheny Ludlum Steel Corp.

Steels, Stainless.....Describes porous stainless steel, alloys. Types, performance, and application data for stainless steel and other metals with controlled porosity now available in company's 45 p. Brochure.
237D Micro Metallic Corp.

Steels, Stainless.....Highly corrosion-resistant stainless steel—weldable—100% non-magnetic. Request valuable booklets containing up-to-date information on Waukesha stainless steel & "Waukesha Metal."
237E Waukesha Foundry Co.

Steels, Stainless . . . . . "Fabrication of Stainless Steels"—contains valuable information for your shop men on various methods of handling, forming, and finishing stainless steel. Copies available on request.
39b *Allegheny Ludlum Steel Corp.

Steels, Stainless.....“Armco's ELC Stainless Steels,” a new informative booklet, presents data on 2 extra-low carbon stainless steel grades that are fully satisfactory for service in welded equipment up to 800 F.
237F Armco Steel Corp.

Steels, Stainless.....“A Stainless Profit Story for the Paper Industry” contains recommended applications for pulp and paper mills, and test data on stainless steels under specified chemical conditions.
237G Armco Steel Corp.

Steels, Stainless . . . . . “Machining of Armco Stainless Steels” gives specific recommendations on speeds, feeds & tool compositions as well as tool grinds & procedures for all Armco Stainless Types. 36 p.
237H Armco Steel Corp.

Steels, Stainless.....“Paper-Thin Stainless for Light, Vital Parts”—a folder with data on Armco stainless steel strip 1½ to 10 thousandths of an inch thick, with gage uniformity right across the strip.
237I Armco Steel Corp.

Steels, Stainless.....Story of stainless steels in the fiery applications, with suggested procedure for the selection of the right grade. Request illustrated booklet, “Armco Stainless Steels for Heat Resistance.”
237J Armco Steel Corp.

Steels, Stainless.....“Welding and Soldering of Armco Stainless Steels” covers all types of welding, lists electrode and filler rod recommendations for the standard types of Armco stainless steels. 52 p. Manual.
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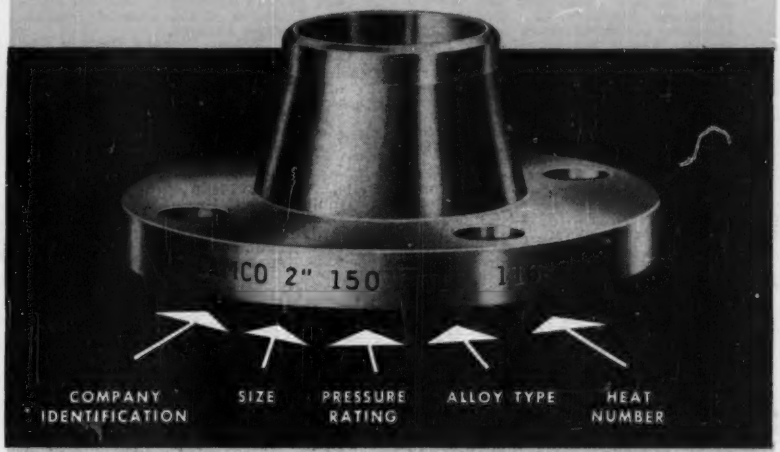

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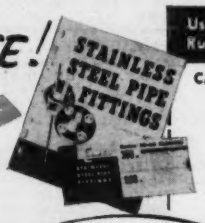

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238B Armco Steel Corp.

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238C Armco Steel Corp.

Steels, Stainless....."Stainless Steel & Textiles" presents story of stainless steels as they can be used in textile processing. Facts are backed by test data on average corrosion rate of different stainless types.
238D Armco Steel Corp.

Steels, Stainless..... Makes available valuable reference, "AL Stainless Steel in Chemical Processing"—36 p. on various applications, advantages, etc. of stainless in the chemical industry. Request your copy.
39c *Allegheny Ludlum Steel Corp.

Structural Materials.....Lamicor—a new structural material combining unique thermal, electrical, chemical & mechanical properties—fully described in illustrated Folder. Covers applications, specifications, etc.
238E Strick Plastics Corp.

Tantalum Equipment.....Immunity to hydrochloric, nitric & perchloric acids, iodine, bromine, etc., eliminates shutdowns, repairs, lost production time, spoilage, fume damage & other costly corrosion results.
238F Fansteel Metallurgical Corp.

Teflon Products.....6 p. folder lists the outstanding properties of Du Pont's Teflon and its numerous applications. Standard Shapes of Teflon as well as Specials are included. Request descriptive Bulletin 410.
238G Micromold Products Corp.

Tin.....20 p. booklet tells important story of Straits tin and its numerous uses today. Includes sections on new tin alloys, tin solders, tin chemicals. Covers tin resources and supply. Completely illustrated.
238H Malayan Tin Bureau.

Titanium Sponge....Resists chlorides and other corosive chemicals as no other structural metal can. Offers general booklet on titanium plus a new technical bulletin with valuable data on corrosion-resistant properties.
85 *E. I. du Pont de Nemours.

Titanium.....White lustrous metal—dark gray powder—melting point 1727°C—powder ignites 250°C. Features valuable uses: corrosion-resistant materials; electronic getter; scavenger. Details in Bulletin 600.
238I Metal Hydrides.

Titanium.....Shows resistance to chloride solutions and retains useful strength up to 800-1000F. Other advantages and data on application and fabrication of titanium alloys in descriptive Rem-Cru Review.
238J Rem-Cru Titanium.

Tungsten.....20 p. Brochure describes manufacture, properties and uses of tungsten. Colorful flow-chart shows how tungsten is manufactured and quality-controlled from ore to finished products. Illustrated.
238K Sylvania Elec. Products.

*From advt., this issue

Electrical & Mechanical

Ball Bearing Industrial Units.....Combination of important design features makes Sealmaster ball bearing units top choice for smooth running, dependable performance with minimum maintenance. Request Catalog 454.
238L Stephens-Adamson Mfg. Co.

Batteries, Storage.....Battery selection techniques are emphasized in revised company manual. Deals with storage batteries for stand-by power, emergency lighting and switchgear applications. 20 p. Bulletin No. 210.
238M Electric Storage Battery.

Batteries, Storage, Industrial Truck..... 20 p. booklet furnishes electrical data, weights and dimensions of all standard battery assemblies for this service. Features of the nickel-iron-alkaline storage battery.
238N Edison Storage Battery Div.

Bearings, Nylon.....Covers advantages of Nylon as a bearing material, particularly where bearings must operate without oil lubrication. Includes engineering & installation data in illustrated, 8 p. Catalog.
238O Thomson Industries.

Belts, V-.....76 p., fully illustrated multi-V belt Engineering Handbook features a convenient guide to the design of standard & high capacity drives. Includes series of 22 simplified, easy-to-read tables.
238P B. F. Goodrich Co.

Belts, V-.....Announces publication of an entirely new edition of Catalog of rubber products for industry. Covers v-belts, transmission belts, all types of hose, molded products, etc. Illustrated. No. 25-C.
238Q Raybestos-Manhattan.

Belts, V-.....Manual covers V-belts of all designs including standard, super, steel, notched steel, open-end, detachable-link, and double-V construction. Also drive design data, selection tables, etc.
238R T. B. Wood's Sons Co.

Belts, V-.....Links are quickly joined by easy-to-use cup-washers & T-screws to make up individual belts. Easiest V-belt to couple & uncouple. Lasts longer—more flexible. Offers 8 p. illustrated Catalog.
238S Manheim Mfg. & Belting Co.

Cables.....Illustrated, 36 p. on rubber-insulated Loxarmor cable constructions, a cost-saving cable design for use in racks or trays for applications where rigid conduit systems are unnecessary. Bulletin 1090.
238T Okonite Co.

Cables, Rubber-Insulated.....128 p. describes Okolite-Okoprene 0-5000 volt unshielded, rubber-insulated, neoprene-sheathed cable—construction, engineering data, installation & handling, etc. Bulletin OK-1085.
238U Okonite Co.

Casters & Wheels.....Provide maximum floor protection, economy and efficiency. Sturdy construction offers extra long life of satisfactory service. Types and sizes for every purpose. Full details in Manual.
238V Darnell Corp.

Chain, Metal.....Chain made of special heat-treated, alloyed ferrous metal. Features longer chain life...greater resistance to corrosion or abrasion... etc. Complete information in Bulletin No. 53-56.
238W Chain Belt Co.

Chain, Roller.....Precision steel roller chain meets the 3 big requirements for lower drive & conveyor costs: (1) long life (2) low maintenance costs (3) high efficiency. Full details in 148 p. Data Book No. 2457.
238X Link-Belt Co.

Chain, Steel.....Illustrated bulletin, "Quick Facts About Chain," offers information on chain for load binding and tie-down, agricultural implements, towing, tail-gates, logging, railroad use, etc. 4 p.
238Y Joseph T. Ryerson & Son.

Chains & Sprockets.....340 p., fully illustrated book includes valuable data on chains & sprockets for conveying, elevating & power transmission. Features flexible cover & handy thumb index. Catalog No. 950.
238Z Link-Belt Co

Chains & Sprockets.....Announces publication of a Catalog on the company line of miniature mechanical chain and sprockets, with complete engineering data and accessory information. Fully illustrated, 8 p.
238AA Sierra Engrg. Co.

Circuit Breakers, Air.....Contains pertinent information, features, illustrations, etc. on various types of air circuit breakers. Includes data on weatherproof and dust-tight enclosures. Bulletin 5107-DR-1.
238BB I-T-E Circuit Breaker Co.

Cleaners & Expanders, Tube.....Tube cleaners and tube expanders keep tubes at peak efficiency, reduce down time due to tube failures. Quickly remove hardest deposits from straight or curved tubes. Complete data.
238CC Airetool Mfg. Co.

Closures.....Sillers Flex Ring Closures offer advantages over conventional flange type of closures: low initial cost—less time for opening & closing (just one bolt)—ease of handling—etc. Bulletin No. 3000.
238DD Sillers Engrg. Co.

Clutches, Cam.....A comprehensive reference file includes catalogs describing the complete line of Morse cam clutches for indexing, over-running and backstop applications. Catalogs are fully illustrated.
238EE Morse Chain Co.

Conduit, Electrical.....New booklet describes heavy-duty, rigid steel electrical conduit, Superduct. Shows how conduit stands up under corrosive attacks of salt spray, sulfuric acid, caustic soda, heat exposure, etc.
238FF National Elec. Products Corp.

Conduit, Liquid-Tight..... Sealtite flexible, liquid-tight conduit gives wiring maximum protection against oil, grease, water, dirt, chemicals, corrosive atmospheres & weather. Request Sealtite Bulletins.
179 *American Metal Hose Branch.

Connectors....."MI" Series Connectors for simplified installation of safety mineral insulated cable: fewest components—no messy compounds—no maintenance—no wire pulling. Details in Bulletin TMI-455.
238GG Appleton Elec. Co.

Contactors, Air-Break.....Durability & long-term dependability were given prime consideration in the design. As result, the roughest repetitive duty becomes routine. Data in Bulletins 14B-6410B, 14B7303.
238HH Allis-Chalmers Mfg. Co.

Couplings, Automatic.....Automatic centrifugul clutch couplings feature an exceptional ability to handle all types of misalignment. Made in large number of sizes & several different types. Details in Bulletin No. CE-3.
238II Hilliard Corp.

Drives.....Illustrated 24 p. Bulletin describes new design of fractional hp Vari-Speed Motordrive. Sections on operating features & controls, installations, how to select, prices & ratings, etc. No. M-543.
238JJ Reeves Pulley Co.

Drives.....Illustrated, 32 p. describes parallel shaft gear drives. Lists 39 standard size drives for efficient vibration-free transfer of power, together with line of baseplates & built-in backstops. Book 2619.
238KK Link-Belt Co.

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Acetoxystearate	✓	✓	✓			
Undecylenate	✓	✓				

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Electrical & Mechanical

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240A W. A. Jones Foundry & Mach.

Drives, Adjustable-Speed.....Describes features and advantages of all-electric adjustable-speed drives which provide automatic load control for safe, high-speed pulp grinding, in illustrated Bulletin D-2311.
240B Reliance Elec. & Engrg. Co.

Drives, Chain.....Announces the availability of a revised 16 p. profusely illustrated Catalog which includes new and expanded data on capacity ratings of Hy-Vo high speed, heavy-duty chain drives. No. C72-51.
240C Morse Chain Co.

Drives, Control.....New, small, piston-operated control drives improve the flow characteristics of butterfly valves, dampers, hydraulic couplings, feeders, and similar regulating devices. Data in Spec. CA040.
240D Bailey Meter Co.

Drives, Dry Fluid.....Flexidyne easily handles difficult starting problems, and gives a new kind of protection against shock and overloads. For complete product information, request company's special Bulletin.
240E Dodge Mfg. Corp.

Drives, Electric Power.....Company line of electric power drives engineered to your requirements. Covers Speed-Trol, Slo-Speed, Klosd and Klosd-Tite electric power drives. 20 p. illustrated Catalog No. 574.
240F Sterling Elec. Motors.

Drives, Fluid.....Available in nine different types, with a wide variety of input, output, combinations for any motor or engine installations from ¾ to 850 horsepower. Covers full details in Bulletin No. 144-D.
240G Twin Disc Clutch Co.

Drives, Multi-V-.....Announces the availability of a tabbed 100 p. Manual which presents a scientific and simplified method for rating V-belts. Contains tables, graphs, photos, etc. Book No. V-1400-E2F.
240H Worthington Corp.

Drives, Poly-V.....New concept of power transmission. Features include: solution to "matching" problems; reduced belt & sheave inventory with greater interchangeability, longer life; etc. Illustrated Brochure 6638.
240I Raybestos-Manhattan.

Drives, Shaft-Mounted.....These versatile speed-reducing units save space, power, material, and time. Includes selection, application, and dimension details in completely illustrated, 8 p. Bulletin 7101.
240J Falk Corp.

Drives, Silent Chain.....88 p. brochure offers detailed engineering data. Covers design and application information, drive components and accessories, operational and technical data, etc. Request Book No. 2425.
240K Link-Belt Co.

Drives, Speed.....Describes company's new single wide-range belt variable speed drive. Shows how to design and select drives from 1 to 20 horsepower motors. Dimensions and lists prices fully covered. Bulletin 497.
240L T. B. Wood's Sons Co.

Drives, Speed.....New Cleveland Speed Variator is a simple compact drive that provides infinitely variable output speed over a 9:1 range from a constant speed power source. Data in illustrated Bulletin K-100.
240M Cleveland Worm & Gear Co.

Drives, Variable Speed.....Choose Varidrives for unequaled simplicity. Dependability proven by more than 20 years of highly successful performance. 2 to 10,000 rpm—¼ to 60 hp. Illustrated, 16 p. Booklet.
240N U. S. Elecl. Motors.

Drives, Variable Speed.....Stepless—instant starting—compact—50:1 speed range—good regulation without tachometer—long life—virtually maintenance free service—low cost—etc. Bulletin S580-5-55.
240O Magnetic Amplifiers.

Electric Equipment.....28 p. offers data on: G-E electrical equipment for power generation; power distribution & conversion; power utilization; instrumentation; descriptive publications; etc. Bulletin GED-1966A.
240P General Elec. Co.

Eliminators, Vibration.....Absorb vibration, deaden noise in air conditioning, refrigeration and other systems. Includes valuable data on features, installation, sizes, etc., in illustrated Bulletin No. VE-310R.
240Q American Metal Hose Branch.

Engines.....Describes 225 to 675 hp Le Roi L3460 & L4000 engines. Cutaway views & studio photos show advanced design features—integral V-12 cylinder block design, counter balanced crankshaft, etc. Bulletin E-7.
240R Westinghouse Air Brake Co.

Engines, Diesel.....Illustrated, 20 p. covers features of Type "S" & "SS" heavy duty diesel engines in sizes from 375 to 1000 hp. Data on lubrication, cooling & fuel injection systems of engines. Form 10,040.
240S Ingersoll-Rand Co.

Expanders, Tube.....Describes company's line of tube expanders for condensers and heat exchangers, and furnishes complete details on how to choose the proper expander for each rolling job. Illustrated Bulletin Y-38.
240T Elliott Co.

Expanders, Tube.....Makes available illustrated News Bulletin showing the latest tube expanding equipment available for fire tube boilers, water tube boilers, condensers and similar heat transfer units. 4 p.
240U Gustav Wiedeke Co.

Fasteners, Stainless Steel.....Stainless fasteners & pipe fittings in stock. All types & sizes of screws (hex head, Phillips, slotted, socket), bolts, nuts, rivets, etc. Offers complete details in Manual No. P6.
240V Allmetal Screw Products Co.

Fixtures, Explosion-Proof.....Standardized Unilet body permits 58 second interchange of 60 watt to 500 watt fixtures...saves time, prevents shutdowns. Bulletin provides full details on AA-51 Series.
240W Appleton Elec. Co.

Gaskets, Spiral Wound.....Detailed Bulletin on spiral wound gaskets for pipe flanges; boiler manholes, handholes & tube caps; etc. Includes flange gasket and boiler gasket dimension tables. No. AG-953.
240X U. S. Gasket Co.

Gaskets, Teflon.....The ideal seal for many process applications is a Flexitallic gasket with teflon trapped between edges of stainless steel. For complete data request folder, "Teflon in Flexitallic Gaskets."
327 *Flexitallic Gasket Co.

Gaskets, Teflon-Jacketed.....Includes pertinent information on corrosion-resistant teflon-jacketed gaskets for glass-lined steel connections. Corning conical flanges, etc. in illustrated Catalog No. TG-953.
240Y U. S. Gasket Co.

Gearing.....Complete data on Duti-Rated Lifetime gearing. Besides illustrating & listing line, with full specifications, book offers material helpful in selection of proper gear sets. Engrg. Manual Dr. No. 2.
240Z Foote Bros. Gear & Mach.

Gears, Double Helical.....Reference on double helical gears furnishes pertinent information on specifications, construction design, testing and various applications. 12 p. illustrated Bulletin No. 1958E.
240AA Worthington Corp.

Generating Plants, Electric.....New emergency plants of 75,000 watt capacity specially designed to meet electrical requirements of hospitals, hotels, chemical plants, food processing plants, etc. Illustrated.
240BB D. W. Onan & Sons.

Isolators, Shock & Vibration.....Barry-mount Type 5200 is a combined shock & vibration isolator used to protect sensitive shipboard & vehicular installations. Vertical natural frequency—20cps. Bulletin 541.
240CC Barry Corp.

Motor Controls.....Company provides broad line of motor controls for the chemical and process industries—in special enclosures for all operating conditions. Contains full information in 120 p. Catalog.
240DD Allen-Bradley Co.

Motor Starter-Circuit Breakers.....Explosion-proof, dust & rain-tight circuit breakers & motor starter Unilets offer superior design, construction & performance. Valuable technical data in Bulletin BH.
240EE Appleton Elec. Co.

Motor Starters.....Throughout petroleum industry, EC&M motor starters are providing continuous safe service ...helping to boost petroleum production. Describes 2200-5000-volt motor starters in Booklet 1062.
240FF Electric Controller & Mfg.

Motor Units.....Chapman's simple and rugged motor unit gives accurate trouble-free control of large valves and sluice gates. Operates smoothly under the most adverse conditions. Details in Catalog No. 51.
240GG Chapman Valve Mfg. Co.

Motors.....For dirty or corrosive location or for outdoor operation in all kinds of weather. Full information on tube-type totally-enclosed, fan-cooled and explosion-proof motors in Bulletin No. 51B7149.
240HH Allis-Chalmers Mfg. Co.

Motors.....Company announces the availability of their Lubriflush booklet ...a real refresher course on motor lubrication. Tells all about motor bearing greasing. Includes valuable engineering information.
240II U. S. Elecl. Motors.

Motors.....Here is extra motor value—double-shielded bearing . . . large grease reservoirs...bolted-on bearing cap...labyrinth seals. For complete details on bearing design, request Bulletin No. 51B7225.
240JJ Allis-Chalmers Mfg. Co.

Motors.....Find out about Star-Kimble special motor designs. Request company's informative literature covering standard squirrel cage—brake-motors —wound rotor—D-C motors...generators...M-G sets.
240KK Miehle Printing Press & Mfg.

Motors.....Cast iron frame motors for extra protection in corrosive atmospheres. Features include completely protected laminations, special varnish treated windings, a running shaft seal. Bulletin MU-132.
240LL Wagner Elec. Corp.

Motors.....The only motor with a built-in pinion—U. S. Syncrogear, 16 p. descriptive booklet presents engineering acts you should know about geared motors & illustrates the various U. S. Syncrogear types.
240MM U. S. Elecl. Motors.

Motors.....As a companion to its line of Type M Unibrake motors with magnetic braking...company now offers a line of Type D Unibrake motors with dynamic braking. Provides complete information—Data 3810.
240NN Master Elec. Co.

*From advt., this issue

Motors.....Announces the availability of a new multi-color 8 p. reference entitled, "Automation Through Varitrol Control," which illustrates the numerous features of Varitrol control and U. S. Varidrive motors.
241A U. S. Elecl. Motors.

Motors.....12 p. reference covers many revolutionary features of all-new U.S. Type H Uniclosed motor. Cut-open views of motor, illustrating its various constructional features, shown in full color. Request Booklet No. 1853.
241B U. S. Elecl. Motors.

Motors.....Explains the advantages of pre-lubricated bearing design, with cutaway view, cross-section diagram, comparison chart, and statements by bearing manufacturers. Find complete details in Bulletin B-2201.
241C Reliance Elec. & Engrg. Co.

Motors.....Enclosed motors meet tough requirements of chemical industry. Makes use of industry's latest materials including silicone, polyester film, Textolite and neoprene. Presents descriptive Bulletins.
241D General Elec. Co.

Motors.....Graphically illustrates improved types of U.S. vertical solid shaft motors. Includes Unimount vertical motors in ratings from ¼ to 400 hp in grease & oil lubricated types. Request Bulletin No. 1868.
241E U. S. Elecl. Motors.

Motors.....New multi-color Booklet illustrates the 20 principal types of improved U. S. motors—Uniclosed, Totally-Enclosed, Explosion-Proof with and without fan, Varidrive, Syncrogear, etc. No. 1878.
241F U. S. Elecl. Motors.

Motors.....Positive protection . . . positive identification—all new Reliance A-c. Motors provide these 2 essentials to trouble-free operation in hazardous or corrosive atmospheres. Bulletin No. B-2401.
241G Reliance Elec. Engrg. Co.

Motors.....New re-rated motors (Series 100) save space, are easier to interchange. Feature double-shielded bearings—serve your needs better all ways. Full information on line in detailed Bulletin N-100.
241H Howell Elec. Motors Co.

Motors.....Meet the toughest conditions. Ribbed frame provides effective heat radiation...fan-driven cowl-directed air-blast carries off heat, & also prevents settling of dust on motor frame. Request Bulletin.
241I Elliott Co.

Motors.....The extra dependability of Electro Dynamic motors covered in report, "Motor Showdown." Includes data on comparative results of motor performance tests. Also a Catalog of industrial motors.
241J General Dynamics Corp.

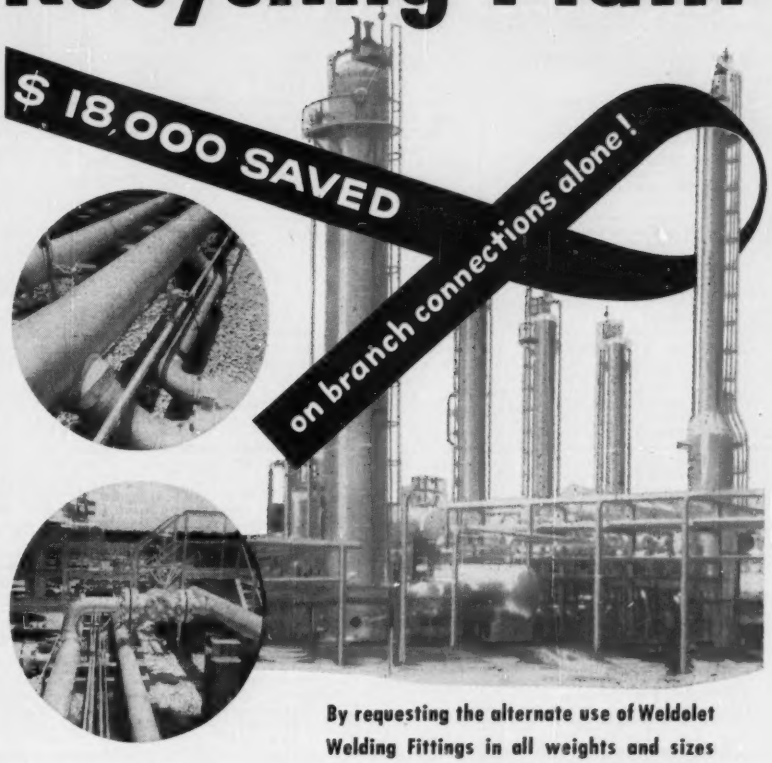
Motors.....Wagner Type DP motors are protected by rugged, corrosion-resistant cast iron frames, smoothly rounded so that no moisture can collect on them. For complete information, request Bulletin No. MU-202.
241K Wagner Elec. Corp.

Motors.....Design of 2-pole motors 900 hp & larger described in new Bulletin. Ideal for boiler feed pumps, pipeline pumps, centrifugal blowers, descaling pumps, etc. Completely illustrated. 8 p. No. O5R8123.
241L Allis-Chalmers Mfg. Co.

Motors.....Information on the new Life-Line "A" motors. Covers new insulating materials, new stator core, new cooling methods, new precision manufacturing techniques. Full details contained in Booklet B-6154.
241M Westinghouse Elec. Corp.

Motors.....Illustrated, 12 p. describes new Super "T" Line D-c motors with Dynamic Response. Includes data on speed ranges, acceleration rates, enclosures, dimensions, selection, etc. Request Bulletin C-2002.
241N Reliance Elec. & Engrg. Co.

4500 psi Recycling Plant



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Electrical & Mechanical

Motors, cont.—Seals, Mechanical

Motors.....Offer continuous trouble-free performance. Wide range of types and sizes in complete line permits selection of a standard motor for almost any need. Provides full details in Bulletin No. MU-185.
242A Wagner Elec. Corp.

Motors, Chemical.....Announces development of a motor specially designed for chemical services. It is totally-enclosed & corrosion-protected, designed for dangerous & damaging atmosphere. Bulletin No. 1810.
242B U. S. Elecl. Motors.

Motors, Chemical . . . . . Performance Rated features resist chemical corrosion: cast-iron fan guard; cast-iron terminal box; cast-iron frame and end brackets; etc. Company makes available full product information.
242C Century Elec. Co.

Motors, Chemical.....Corrosion-proof chemical motor with enough flexibility to fit your requirements—it's totally protected. A new booklet, "From Naphtha to Grain Dust," covers the many valuable features.
242D Reliance Elec. & Engrg. Co.

Motors & Controls.....New engineering literature on application of a-c motors & controls to centrifugal compressors. Included in reference are diagrams, charts, graphs, illustrations, etc. Publication No. 1120.
242E Electric Machy. Mfg. Co.

Motors, Explosion-Proof.....New literature shows complete line of explosion-proof motors, typical frame sizes designed and manufactured for the chemical industry. Describes in detail valuable construction features.
242F Marathon Elec. Mfg. Corp.

Motors, Fan-Cooled.....Cartridge bearing design lowers maintenance: bearings protected at all times . . . can be relubricated . . . run longer between grease periods. Details in Bulletin No. MU-196.
242G Wagner Elec. Corp.

Motors, Fan-Cooled.....Totally-enclosed, fan-cooled motors . . . for chemical plant applications. Feature long life, minimized maintenance and top efficency. Details in Chemical Motor Bulletin No. CE-3379.
242H Diehl Mfg. Co.

Motors, Gear.....Feature new dependability, greater starting torque and top efficiency, with output speeds as low as 7.5 rpm. Find complete information on gear motor line in descriptive Bulletin No. GM-1.
242I Howell Elec. Motors Co.

Motors, Gear.....Manufacturer can supply gear motors from ¼ to 15 hp provided with single, double and triple gear reduction. From ¼ to ¾ hp—Bulletin 4-1p21. From 1 to 15 hp—Bulletin 4-1p31.
242J Century Elec. Co.

Motors, Pump.....Provides complete data and illustrative diagrams on the major dimensions of these motors which are especially suitable for deep well irrigation installations and industrial pumping applications.
242K Belgian Elec. Sales Corp.

Motors, Totally-Enclosed.....For dirty or corrosive location or for outdoor operation in all kinds of weather. Available in ratings on frames larger than NEMA 505 up to 3000 horsepower. Data in Bulletin 51B7149.
242L Allis-Chalmers Mfg. Co.

Motors, Varidrive.....Get more production out of your present machines by powering them with Varidrive motors. Occupy little more space than single speed motor. ¼ to 50 hp, 2 to 10,000 rpm. 16 p.
242M U. S. Elecl. Motors.

Motors, Worm Gear.....Covers worm gear motors for horizontal or vertical drive—with a ratio range from 5.66:1 to 100:1 and from ⅛ to 30 hp. Rating tables, prices, dimensions, etc. Catalog No. 46-C.
242N D. O. James Gear Mfg. Co.

Motors, Wound-Rotor.....The company has developed and is now manufacturing a new line of totally-enclosed non-ventilated and totally-enclosed fan-cooled wound-rotor motors. Complete details in Leaflet 51R8195.
242O Allis-Chalmers Mfg. Co.

Packings.....Definite savings in maintenance costs...when you use spiral or die-molded ring packings. Means long uninterrupted sealing service with less wear on rods, shafts, sleeves or stems. File DMCE.
242P Durametallic Corp.

Packings & Gaskets .....Valuable reference furnishes complete information on Chempac-Interlocked and other J-M Chempac packings and gaskets for the chemical and process industries. Illustrated Folder PK-80A.
242Q Johns-Manville.

Packings, Lattice Braid.....Describes patented lattice braid rod & shaft packings. Points out construction features of lattice braid, & covers available materials, sizes & forms. Illustrated Bulletin No. AD-131.
242R Garlock Packing Co.

Packings, Mechanical.....Illustrated, 76 p. describes Chesterton mechanical packings, boiler tube scrapers. Rustsolvo and Spraysolvo, Belt-Flo belt dressing, gauge glasses and accessories. Catalog No. 24-B.
242S A. W. Chesterton Co.

Packings, Valve & Pump.....V-rings, cup and cone, and wedge type packings of chemical resistant pure teflon —engineered for greater flexibility and resiliency. Full information detailed in Bulletin TP-1053.
242T U. S. Gasket Co.

Packings, Saddle Tower.....New 16 p. reference shows how Intalox saddles can help you reduce tower heights, lower gas pumping costs, or obtain greater capacity from your present tower. Request Bulletin S-29.
242U U. S. Stoneware Co.

Power Transmission, Mechanical..... Covers line of mechanical power transmission products—silent chain, roller chain & Hy-Vo drives; sprockets, cable chains, drive shafts, couplings & clutches. Catalog B-20-53.
242V Morse Chain Co.

Pulleys, Variable Speed.....Brochure covers Hi-Lo automatic variable speed pulleys & Hi-Lo systems. Lists advantages of pulley & is documented with graphs, diagrams, cutaway views & photos of unit in action. 8 p.
242W Equipment Engrg. Co.

Reducers . . . . . Ultimate in compact, neat & sturdy vertical motoreducers. Feature outstanding performance in thousands of industrial applications requiring a reliable vertical drive. 32 p. Catalog MR-54A.
283 *Philadelphia Gear Wks.

Reducers, Gear.....Units feature precision gearing, all-steel housings, positive lubrication & wide speed range from 1.5 rpm to 1430 rpm with stock gears. Find complete data in illustrated Bulletin No. 3104.
242X Falk Corp.

Reducers, Motor.....Data on gear motor reducers . . . horizontal or vertical drive—35 sizes, ratio range 10:1 to 1200:1 & from ¾ to 75 hp. Rating tables, dimensions, prices, etc. included in Catalog No. 47-C.
242Y D. O. James Gear Mfg. Co.

Reducers, Speed.....Factual & informative Bulletin covers new "C" line of Winsmith worm gear speed reducers. Key features are concisely described & photos & drawings illustrate 3 designs. No. HW 654.
242Z Winsmith, Inc.

Reducers, Speed....Design & manufacture many types: Worm, Herringbone, Spiral-Bevel, Helical, Planetary, Moto-Reducers, & GearMotors—all for wide range of horsepower & reduction rations. Request Catalogs.
242AA Philadelphia Gear Wks.

Reducers, Speed.....Company announces the availability of a 28 p. fully illustrated catalog containing revised rating tables of their herring-bone and spiral bevel-helical speed reducer line. Catalog No. 120.
242BB Brad Foote Gear Wks.

Reducers, Speed.....All advantages of shaft-mounting . . . all proven performance & economy features of Dodge Torque-Arm speed reducers... are now available for your big jobs. Bulletin offers full details.
242CC Dodge Mfg. Corp.

Rims, Sprocket.....Operation of overhead valves solved thru use of Babbitt adjustable sprocket rim with chain guide. Fits any valve wheel—quickly installed—low in cost. Folder shows many typical applications.
242DD Babbitt Steam Specialty Co.

Rings, Carbon Packing.....Made of special carbon graphite material that automatically assures high resistance to wear, chemical inertness & excellent heat conductivity. Offers details plus sample carbon ring.
242EE C. Lee Cook Mfg. Co.

Rings, O-.....Details production and application of rubber O-ring seals. Covers sections on end products, O-ring sizes, dash numbers and variable tolerances, dimensional data, etc., in 16 p. Brochure.
242FF Minnesota Rubber & Gasket

Rings, O-.....For general industrial hydraulic fluids as well as water & air service . . . are precision-molded of Buna N fuel & oil-resistant compounds. Find details in Industrial O-Ring Folder. Illustrated. 4 p.
242GG Stillman Rubber Co.

Rings, O-.....Fully illustrated. 20 p. describes Garlock O-Rings. Provides complete design information, recommended pressures & available materials for both "dynamic" & "static" applications. Catalog No. AD-148.
242HH Garlock Packing Co.

Rings, Packing.....Announces creation of new department for molding & machining of packing rings & other small parts from pure Teflon, Teflon combined with other ingredients, shredded lead, etc. Bulletin 77.
242II Flexrock Co.

Rings, Weldless Rolled.....Folder explains 8 ways to improve product design through the use of weldless rolled rings. Describes and illustrates rings in sizes to 240 in. and weights to 40,000 pounds.
242JJ Ladish Co.

Seal Cages, Teflon.....For lubricating or cooling stuffing box packing. Able to withstand contact with acids, organic solvents, thionyl chloride, etc.—at normal & elevator temperatures. Data in Packing & Gasket Catalog.
242KK Chemical & Power Products.

Seals.....For long dependable service where: economical operation is desired; operating conditions are hazardous; loss of costly fluids must be prevented; complete sealing is required. Bulletin No. 455-CE.
242LL Durametallic Corp.

Seals, Mechanical . . . . . Replace standard packing in stuffing boxes. Eliminate excessive leakage & frequent repacking. Recommended for corrosive, high temperature or volatile liquid pumping. Request Bulletin.
131b *Byron Jackson Co.

Seals, Mechanical.....Information on the high-efficiency mechanical seal with the unique spring drive. Provide solution to all types of shaft sealing problems. For complete details request illustrated Bulletin No. 9.
242MM Sealol Corp.

*From advt., this issue

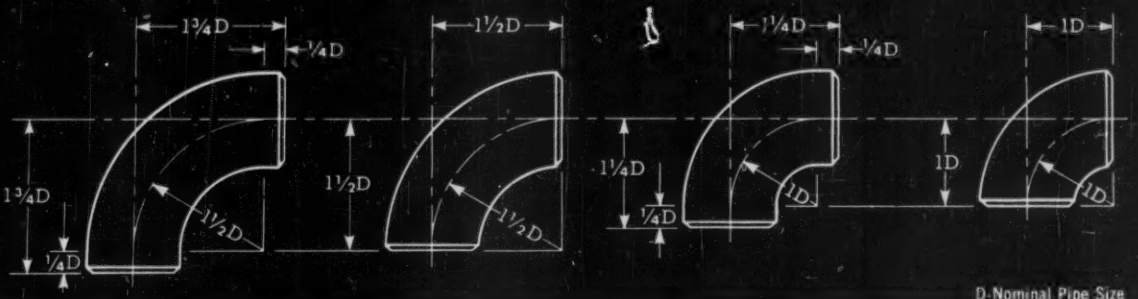
The Unequalled Variety of MIDWEST ELBOWS will Save Money and Simplify Design of Your Welded Piping

1 LONG RADIUS LONG TANGENT

2 LONG RADIUS ASA TYPE

3 SHORT RADIUS LONG TANGENT

4 SHORT RADIUS



D-Nominal Pipe Size

SIZES: 2" thru 36"

A premium fitting at the same price as regular long radius elbows, but with LONG TANGENTS on both ends . . . an exclusive Midwest feature that saves time and pipe.

SIZES: ¾" thru 36"

Dimensions conform to the American Standard for Steel Butt-Welding Fittings, ASA B16.9, and the Manufacturers Standardization Society Specification DS-11.

SIZES: 14" thru 36"

Developed for those installations that require an elbow with a short radius, yet this elbow provides all the additional advantages of Midwest "Long Tangents".

SIZES: 1" thru 36"

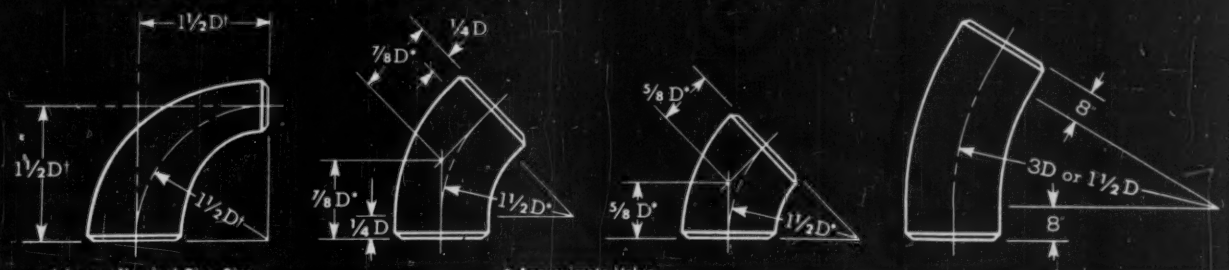
Where space limitations prevent the use of Midwest "Long Tangent" or ASA long radius elbows, these short turn elbows without tangents are recommended.

5 LONG RADIUS REDUCING

6 LONG RADIUS LONG TANGENT

7 LONG RADIUS ASA TYPE

8 CONTUR-ELLS



†-Larger Nominal Pipe Size

*-Approximate Value

SIZES: 2" thru 16"

This elbow takes the place of two fittings . . . a straight elbow and a reducer, thus saving space and one weld. Only Midwest makes the reducing elbow in this size range.

SIZES: 2" thru 30"

The Midwest "Long Tangent" type is also available in 45° elbows at no increase in price. These tangents simplify the assembly of fitting to pipe or flange.

SIZES: ¾" thru 36"

Like all Midwest Elbows, these 45° elbows are selectively reinforced to compensate for the higher stresses that occur in the throat of all elbows subjected to internal pressure.

SIZES: 22" thru 30"

Primarily designed for the gas transmission industry, these are available in small angles, with 8" tangents on both ends, and in carbon steel or high-yield steels.

Exceptional latitude in piping design and economy in erection . . . that's why the unequalled variety of Midwest Elbows is becoming increasingly popular. For example, the Midwest "Long Tangent" Elbow saves pipe . . . permits faster, easier, more accurate lining up . . . often eliminates a short nipple and its extra weld . . . costs no more than other elbows. For all the advantages to be gained by specifying Midwest Elbows, see Catalog 54; ask our distributor for a copy or we shall be glad to send it to you.

6734

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Electrical & Mechanical

Seals, Mechanical, cont.—Wrenches, Open End

Seals, Mechanical.....For pumps, agitators, autoclaves and similar processing equipment. Furnishes the complete story of new line of Chempro "wedge-lock" mechanical seals in illustrated Bulletin No. CP551.
257 *Chemical & Power Prod.

Seals, Mechanical.....Describes and illustrates company's line of Flexibox mechanical seals . . . for the process industries. Includes data on advantages, applications, capabilities, etc., in 12 p. Bulletin No. 10.
244A Sealol Corp.

Seals, Mechanical.....Combining chemically impervious teflon with a balanced bellows design—Chemiseal external mechanical seals last longer & give unsurpassed performance. Details in Bulletin No. MS-954.
244B U. S. Gasket Co.

Seals, Mechanical, Rotary.....Company announces the availability of a new 8 p. reference which shows how you get maintenance-free sealing that slashes fluid mixing cost to a new low. Illustrated Bulletin B-111.
Cov.—4g *Mixing Equipment.

Selectors, Packing.....Presents valuable Simplified Packing Selector—a cardboard disc six inches in diameter—which helps select the right (most economical) packing for almost any application in seconds.
244C N. Y. Belting & Packing.

Speed Change Units.....Designed to fill industry's need for efficient, precision-built standardized line...to eliminate high cost & delayed deliveries of specially designed units. 24 p. Catalog No. CSU-52.
244D Philadelphia Gear Wks.

Sprockets.....Describes newly expanded line of Taper-Lock stock sprockets. Sizes and prices for ½, ⅝, ¾, 1, 1¼, 1½, 1¾ and 2-in. pitch Type B stock sprockets with a hub on one side. Catalog C56-54.
244E Morse Chain Co.

Sprockets.....Covers latest technical data and prices on all items in newly extended line which includes sprockets and chain for sizes ranging from 40 thru 160. Pitch range is from ½" thru 2". 4 p. Bulletin A-632.
244F Dodge Mfg. Corp.

Starters.....Combination starters make neater & safer installations. Feature simple design—quality workmanship—maintenance free contacts—long life. For complete details, request Bulletin No. 712-713.
244G Allen-Bradley Co.

Starters, Motor.....Built in wide range of ratings for squirrel-cage, wound-rotor & Synchronous motors . . . for full or reduced voltage . . . reversing or non-reversing. Details in Bulletin No. 14B6410B.
244H Allis-Chalmers Mfg. Co.

Switches.....20 p. covers 22 "families" of switches, describing 258 different switches, actuators, enclosures. Dimensionalized photos, characteristics, electrical ratings, technical data, etc., in Catalog 101.
244I Micro Switch Div.

Switches.....Illustrated 12 p. catalog of Esco Types P & JR rotary, multipole switches contains complete wiring diagrams & contact charts for voltmeter, ammeter & voltmeter-ammeter switches. Catalog 3054-IN.
244J Electro Switch Corp.

Switches, Rotary Limit.....Announces availability of a Technical Brochure detailing applications & construction features of rotary limit switches. Includes specifications, prices & installation dimensions.
244K Gemco Elec. Co.

Switchgear.....Presents 24 p. guide to I-T-E high voltage switchgear. Covers features, switchgear components, applications, specifications, & construction data. Photographs & diagrams. Request Bulletin 7004 B.
244L I-T-E Circuit Breaker Co.

Switchgear.....Metal-clad switchgear rated 2.4 KV to 13.8 KV & 50 to 500 MVA fully described in illustrated, 52 p. Covers applications, installation, maintenance, design features, etc. Bulletin No. GEA-5664C.
244M General Elec. Co.

Teflon Products.....Illustrated booklet, "The Best in Teflon," covers data on teflon parts & products—bellows, bellows connectors, pump & valve packings, tubing & other molded forms. 12 p. Chemlon Catalog.
244N Crane Packing Co.

Transformers.....Fully illustrated, 100 p. contains ratings, ASA accuracy classifications, and prices of all Standard G-E indoor and outdoor potential and current transformers. Request Bulletin No. GEC-1028.
244O General Elec. Co.

Transformers, Dry-Type.....Describes Allis-Chalmers totally-enclosed dry-type transformers with NEMA Group 3 class insulation for indoor or outdoor applications. Complete information in illustrated Bulletin 61B8222.
244P Allis-Chalmers Mfg. Co.

Transformers, Substation.....Wagner "predesigned" standard unit substation transformers are carefully engineered to meet heavy industrial demands. For details, request Bulletins TU-13 & TU-205.
244Q Wagner Elec. Corp.

Transformers, Variable.....For processes that demand accurate adjustable voltage. Also feature the advantages of excellent regulation—high efficiency—cool operation—long life. Offers complete literature.
244R Superior Elec. Co.

Transmissions, Variable Speed.....Illustrated Booklet contains valuable information; numerous features; operation; construction; dimensions; selection tables; installation data; ordering and prices; etc. 4 p.
244S Standard Transmission.

Transmitters, Power.....Unequalled for repeated start-stop machine operation. Use of transmitters makes it possible to simplify machines, reduce costs, improve operation, etc. Details in Bulletin No. CE-3303.
244T Diehl Mfg. Co.

Turbine-Generators.....Rated from 2500 kw to 40,000 kw—for electric untilities & industrial plants condensing & non-condensing, applications. Cross-sections, drawings, photos, etc. in 56 p. Bulletin GEA-3277C.
244U General Elec. Co.

Turbines.....Mechanical drive turbines offer cost-saving features: combined trip-throttle valve; interchangeable parts; single reservoir for cooling lube oil; etc. Contains pertinent details in Bulletin GEA-4956A.
244V General Elec. Co.

Turbines.....Simple, rugged turbine for mechanical drive operates under all inlet steam conditions up to 600 psig and 750 F. Modified construction allows maximum inlet temperature of 825 F. Bulletin 4202.
244W De Laval Steam Turbine.

Turbines, Gas.....Describes combustion gas turbines for power generation & mechanical drive. Gas turbine-steam turbine cycles, mechanical drive applications, design features, etc. Illustrated Bulletin GEA-5516B.
244X General Elec. Co.

Turbines, Solid-Wheel.....Feature reliable, trouble-free operation. Rugged construction and superior design result in savings by keeping maintenance costs down to a minimum. Full details in Bulletin No. S-116.
244Y Terry Steam Turbine Co.

Turbines, Steam.....Issues literature on line of single-stage steam turbines with steel casing construction. Cutaway view of a typical unit is shown describing the standard features. 8 p. Bulletin 1954C.
244Z Worthington Corp.

Turbines, Steam.....Turbines range from 150 horsepower down to fractional in 6 frame sizes. Feature large number of manually operated valves for individual control of steam nozzles. Details in Bulletin 135.
251 *Coppus Engrg. Corp.

Wattage Control.....Describes how a revolutionary, simple, unique method gives fully automatic proportional wattage control for straight line temperature control throughout entire oven range. Illustrated 8 p.
244AA Blue M Elec. Co.

Wrenches, Open End.....Contribute greater efficiency to assembly and maintenance operations. For complete data request Snap-on Industrial Catalog and General Catalog of 4000 hand and bench tools. 104 p.
244BB Snap-On Tools Corp.

Handling & Packing

Bag Closers.....Entirely portable—require no installation, supports or plant space—handle textile & paper bags—close average 100 lb. bag in less than 6 seconds—etc. Details in fully illustrated Folder.
323 *Dave Fischbein Co.

Bag Closing Machines.....Illustrated booklet entitled, "Suspended Head Bag Closing Machines," describes a simple and popular line of machines capable of handling a wide range of work. Bulletin 201.
244CC Union Special Mach. Co.

Bag Flatteners.....Power-driven Rapistan "BF" bag flatteners that knead and flatten filled multiwall sacks into firm, space-saving packages are now being manufactured. Complete specifications and prices available.
244DD Rapids-Standard Co.

Baggers, Gross.....Describes and illustrates company's manually-operated gross bagger. Lists features and includes a dimensioned engineering drawing showing top and side views. Request Data Sheet No. 5301.
244EE Richardson Scale Co.

Belt Cleaners, Conveyor.....S-A spring type conveyor belt cleaners . . . designed to remove material adhering to belt after discharge, thus insuring maximum belt life by preventing cover wear. 4 p. Bulletin 651.
244FF Stephens-Adamson Mfg. Co.

Belts, Conveyor.....Company presents a new color chart containing valuable engineering information — indicates strength characteristics of eight popular conveyor belt constructions. Charts available upon request.
244GG Quaker Rubber Corp. Div.

Belts, Conveyor, Woven Wire.....Help provide continuous, automatic production—automation. Impervious to damage from abrasion, corrosion, heat, or cold. Makes available valuable technical manual of belt applications.
244HH Cambridge Wire Cloth Co.

Bins, Storage.....29-sheet Technical Brochure on concrete stave storage bins. Contains table of cubic foot weights of flowable materials, bin capacities per foot of height, details of wall construction, etc.
244II Neff & Fry Co.

Boards, Dock.....Series of magnesium dock boards incorporates numerous advantages in design and engineering. Easily handled by one man...can be built to handle loads up to 20,000 pounds. Descriptive Bulletin.
244JJ Magline, Inc.

*From advt., this issue

Buckets, Elevator.....Designed for handling maximum capacities of granular, free-flowing materials at high speeds. Includes construction features, design recommendations for high-speed elevators, etc. in Folder 2548.
245A Link-Belt Co.

Calcium Chloride Handling.....Illustrated, 18 p. tells how to establish, operate & expand facilities for bulk calcium chloride operations. "Recommended Procedures in the Bulk Handling of Calcium Chloride."
245B Dow Chem. Co.

Carriers, Straddle.....Completely illustrated 16 p. booklet, "The One-Truck Fleet," uses case-history approach, documented by on-the-job photos, to describe carrier applications in numerous industries.
245C Clark Equipment Co.

Casters.....Neoprene seals on new series increase life, and cut maintenance time and expense by keeping lubricant in the raceways and sealing out destructive dirt, water and chemicals Descriptive literature.
245D Rapids-Standard Co.

Chlorine Handling.....Illustrated 26 p. Brochure on safe handling of chlorine. Includes details on methods of shipment; instructions for handling; storage from, care, and return of containers, etc.
245E Columbia-Southern Chem.

Containers, Collapsible.....Fully illustrated, 20 p. describes the new U. S. Seald-Bulk system of handling, shipping and storing . . . based on the 70 cu. ft. U. S. Seald-Bin collapsible container. Bulletin CP-70.
245F U. S. Rubber Co.

Containers, Collapsible.....Fully illustrated. 22 p. describes the new U. S. Seald-Bulk system of handling, shipping and storing...based on the 300 cu. ft. U. S. Seald-Bin collapsible container. Bulletin CP-300.
245G U. S. Rubber Co.

Containers, Shipping.....New illustrated Catalog shows the wide variety of G.P.&F. steel shipping containers now available for petroleum, paint and chemical industries. Specifications and carload quantities.
245H Geuder, Paeschke & Frey.

Containers & Tanks, Fiberglass.....Includes description, construction, economy & advantages of molded fiberglass round containers, fabricated fiberglass tanks, molded fiberglass trucks, etc. Illustrated.
245I Laminex Corp.

Conveying Systems.....Select and apply right system for conveying dry, pulverized and granular materials efficiently and economically. Illustrates and describes four conveying systems in Bulletin No. G-1.
245J Fuller Co.

Conveying Systems, Pneumatic.....Offer many advantages: minimum installation costs; lower maintenance costs; no product loss; dust tight; etc. Covers operation & applications in illustrated Bulletin T-V 553.
245K Young Machy. Co.

Conveyor-Elevator Systems.....For bulk handling problems where corrosion, degradation, dust or economical adaptation to limited space or plant layout are vital considerations. Information in Bulletin No. 349.
245L Stephens-Adamson Mfg. Co.

→Want more information on any of these items? Just write its code number on one of the postcards inside the back cover, then mail it to us. It's that easy now.

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The "Entoleter" Impact Mill now features a rotor and liner with highest abrasion-resistant ceramic material at points of impact . . . commercial applications prove outstanding wear and corrosion resistant characteristics required for particle size reduction in the CHEMICAL INDUSTRY.

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Handling & Packaging

Conveyor–Elevators–Feeders–Conveyors–Stackers

Conveyor-Elevators.....Company's compact Redler units are ideally suited for handling food products, chemicals, wood chips, coal and numerous other materials. For complete information refer to illustrated Catalog 140.
246A Stephens-Adamson Mfg. Co.

Conveyors.....Provides detailed literature on company line of conveyors... which handle materials at great savings. Included are bulk chemicals, powders, abrasive dusts, sludges, etc. Data in Bulletin CE-954.
246B Hapman Conveyors.

Conveyors.....New advantages for you in bulk materials handling with Hapman multiplane trolley conveyor with "Stiff-Arm" bucket hangers. For handling coal, ashes, chemicals, etc. Request Bulletin CE-1154.
246C Hapman Conveyors.

Conveyors . . . . . Ajax Lo-Veyors convey bulk materials fast, gently, safely . . . in large or small sizes and tonnages . . . at new low cost. For complete information on product line, request Catalog No. 39.
316 *Ajax Flexible Coupling Co.

Conveyors.....Makes available a detailed 192 p. Catalog of standardized components, accessories, typical conveyor layouts and installation photographs. Complete, comprehensive, and easy-to-use. No. 76-A.
246D Barber-Greene Co.

Conveyors.....Illustrated, 32 p. covers company's three featured, patented products and custom built conveyor equipment. Includes features, typical applications, operation, engineering data, etc. Catalog 370.
246E Prab Conveyors.

Conveyors.....40 p. furnishes information on gravity conveyors (roller and wheel types), power conveyors (live roller and belt types), etc. Includes applications and construction features. Catalog No. 54.
246F Metzgar Conveyor Co.

Conveyors.....Covers conveyors of all types, bucket elevators & feeders. 32 p. on troughing idler conveyors, pulleys, idlers, takeups, & other parts; full range of flight conveyors; etc. Illustrated Catalog No. 54.
246G Bonded Scale & Mach. Co.

Conveyors.....Push buttons route carbon black thru dust-tight zipper distributing system. If you have a dust or degradation problem . . . find out how much a Zipper System offers you. Request Bulletin No. 349.
246H Stephens-Adamson Mfg. Co.

Conveyors.....New Conveyor Catalog describes and illustrates portable stacking conveyors, floor to floor conveyors, horizontal belt conveyors, gravity roller conveyors, and gravity wheel conveyors.
246I Samuel Olson Mfg. Co.

Conveyors.....In any industry wherever dry bulk materials are used . . . the introduction of Airstream conveyors invariably leads to lower-cost materials handling. For full details, request 24 p. Bulletin 529.
246J Dracco Corp.

Conveyors, Bag.....Furnishes valuable data on Saco sectional bag conveyor ...a heavy duty unit designed for handling bags, boxes and cartons. Includes features and specifications in illustrated Bulletin 1554.
246K Stephens-Adamson Mfg. Co.

Conveyors, Belt, Sectional.....Offers a complete set of belt conveyor components pre-engineered for customer assembly. Includes new carrier & return roll, heat & tail pulley assemblies, etc. Request Bulletin 1454.
246L Stephens-Adamson Mfg. Co.

Conveyors & Elevators.....Spiral conveyors & bucket elevators available in a range of types & sizes that meet practically every industrial requirement & operating condition. Details in complete Catalogs.
246M Jeffrey Mfg. Co.

Conveyors, En Masse.....Information on how an enclosed endless chain, fitted with specially designed flights, conveys such free flowing materials as grain, resins, pigments, etc. Fully detailed and illustrated.
246N Gifford-Wood Co.

Conveyors, Gravity & Power.....28 p. reference shows over a hundred pictures of Standard Conveyors & Pneumatic Tube installations & conveyor units in various types of industries. Request valuable Catalog No. 309.
246O Standard Conveyor Co.

Conveyors, Multi-Tier.....Convert heating, cooling, drying and similar operations from batch to continuous processing. Process products under exact time, temperature and atmospheric control. 8 p. Bulletin.
233 *J. W. Greer Co.

Conveyors, Natural-Frequency.....Work on unique, patented vibrating principle which permits them to handle many materials too tough for most screw, belt, apron, vibrating, etc. conveyors. Data in Bulletin 111.
246P Carrier Conveyor Corp.

Conveyors, Power.....24 p. completely describes and illustrates 3 individual belted power conveyor frame designs —channel frame, unitized formed rail frame and angle iron frame. Includes numerous cutaway views.
246Q Food Machy. & Chem. Corp.

Conveyors, Screw.....Includes various sizes and types of conveyors fully illustrated with photographs, line drawings, dimensions, in detailed Screw Conveyor Catalog and Engineering Data Book ID-541.
246R Continental Gin Co.

Conveyors, Screw.....Feature efficient operation plus long-life, low maintenance service. Company makes available a 92 p. screw conveyor book of pre-engineered selection and application data. Book No. 2289.
246S Link-Belt Co.

Conveyors, Tubular.....Offers data on a totally enclosed bulk material handling conveyor featuring a 2-directional chain to convey in any direction. Provides complete information in illustrated Bulletin R-20.
246T Prab Conveyors.

Conveyors, Vibrating.....Designed for toughest materials handling jobs. Numerous advantages: less power required; longer conveyors—one drive; higher capacity; less headroom; etc. Offers Bulletin 135A.
246U Hewitt-Robins.

Conveyors, Vibrating.....“Natural Frequency” vibrating trough conveyors convey bulk or packaged material horizontally or up inclines to 10° at speeds up to 70 fpm. Offers full description in Bulletin No. 353.
246V Stephens-Adamson Mfg. Co.

Dischargers, Circular Bin.....Prevent arching or clogging of bulk materials in bins with an S-A circular bin discharger fitted with a revolving arch breaker. Find complete details in descriptive Bulletin No. 250.
246W Stephens-Adamson Mfg. Co.

Docks, Loading.....Eliminate need for permanent loading docks, truck wells or elevators. A highly portable unit ...it features a capacity of 6000 pounds. Describes many advantages in fully illustrated Bulletin.
246X Raymond Corp.

Drums.....Steel drums assure complete product protection. They are scalfree and rust-inhibited. Furnished in capacities from 2½ to 110 gallons. Presents information in full-color, illustrated Brochure.
246Y U. S. Steel Products Div.

Drums.....Tight head or removable head types . . . protect sensitive chemicals, oils, and food products against contamination during shipment or in storage. Data in Hackney Drum and Barrel Catalog.
246Z Pressed Steel Tank Co.

Drums, Magnetic.....Eriez magnetic drum is an unbeatable unit for extracting tramp iron from materials conveyed in spouts, chutes, spiral conveyors, etc. Find complete information on drum in Bulletin B-601.
246AA Eriez Mfg. Co.

Dumpers, Drum.....New Data Sheet covers company's portable drum dumper for mechanically elevating and emptying containers into high-walled receptacles. Illustrations and technical details of its operation.
246BB Gifford-Wood Co.

Elevators.....Are made for service—every part is designed for continuous and trouble-free operation. Complete data on elevators of accessible “One Man, One Minute” designs in illustrated Bulletin.
246CC Sturtevant Mill Co.

Feeders.....Pneumatically activated solution full-view plastic constructed pumps, with no metal surface exposed to liquids handled, permit accurate feeding of corrosive solutions. Offers detailed Bulletin No. 340.
246DD Infilco Co.

Feeders.....Details on small, low-cost feeders for metering, controlling, mixing, and dispensing small quantities of liquid chemicals. Specifications, capacities, installation diagrams, etc. Catalog No. 70-50.
246EE Fischer & Porter Co.

Feeders.....Model E in stainless steel... controlled feeding of liquids, with precision, dependability and low cost. Includes data on numerous features, specifications, etc. in fully illustrated Bulletin No. 540.
246FF Clarkson Co.

Feeders.....Valuable data on Model E in PVC—handles sulfuric, hydrochloric, & nitric acids of all grades. Covers features, physical characteristics, & specifications in company's fully illustrated Bulletin No. 541.
246GG Clarkson Co.

Feeders.....Describes “Loss-in-Weight” Gravimetric feeders for dry materials. Includes advantages, description, operation, feed range, components, accessories, etc., in illustrated Bulletin No. 30-H12A.
246HH Omego Mach. Co.

Feeders.....Describes new “fluid power” vibratory feeders with variable adjustment of the rate of flow. Explosion-proof—operate on air, oil or water pressure. Complete details in illustrated product literature.
246II Syntron Co.

Feeders.....Available in 8, 10 & 12-inch sizes, Prater Airlock feeder saves money in handling practically any finely ground or granulated material including most highly abrasive substances. Illustrated Brochure.
246JJ Prater Pulverizer Co.

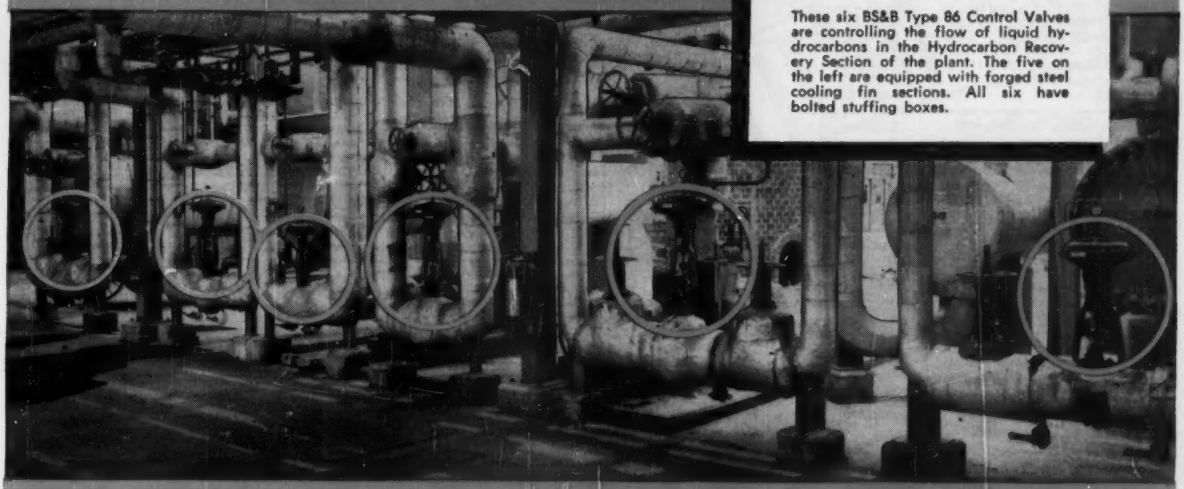
Feeders.....From 100 lbs./hr. to 100 tons/hr. are suspended from the feed bin which: eliminates costly feeder support structure; provides accessibility to equipment following feeder. Data in Bulletin 33-E-11.
246KK Hardinge Co.

Feeders, Belt Gravimetric.....Simple mechanical control . . . wide feeding range . . . positive, non-flood rotor for “floodable” materials . . . accurate within 1% over range specified. Offers data in Bulletin No. 35-G5A.
246LL Omega Mach. Co.

Feeders—Conveyors—Stackers.....Entire installations built to withstand adverse conditions . . . to operate efficiently at low cost . . . to meet rigid engineering standards. Information in Catalog 852.
246MM Jeffrey Mfg. Co.

*From advt., this issue

Where Dependability Counts Most...



These six BS&B Type 86 Control Valves are controlling the flow of liquid hydrocarbons in the Hydrocarbon Recovery Section of the plant. The five on the left are equipped with forged steel cooling fin sections. All six have bolted stuffing boxes.

BS&B Automatic Controls Get The Job!

One of the largest petro-chemical plants in the world is that of the National Petro-Chemicals Corporation at Tuscola, Illinois. This $50,000,000 plant extracts the heavier hydrocarbons from natural gas and converts them into fuels and chemicals used in the manufacture of plastics, synthetic fibers, fertilizers, detergents and dozens of other useful products.

This plant is largely automatic, thanks in large measure to numerous BS&B Pressure Control Pilots and Liquid Level Control Pilots—and to *more than 200* BS&B Automatic Control Valves in plant service!

Valves range in size from ¾" to 8", many supplied with special body materials. Body types range from screwed globe cast iron valves to 600# ring type joint, flanged globe steel valves. Some were supplied with Haveg Bodies.

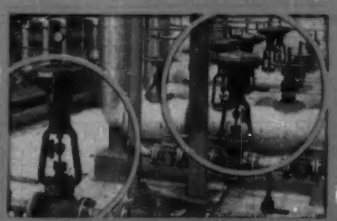
Valve trim included such materials as stainless steel and Hastelloy "B". Several valves in strategic plant locations were furnished with our Type Y Side Handwheels for emergency operation in the event of an operating medium failure. Some, destined for high temperature operation, were equipped with finned cooling sections. Many were furnished with valve positioners, either yoke mounted or mounted in the diaphragm case.

But however specialized the application, each BS&B Control was selected for the job because of its *dependability*... so vital to the successful operation of so complex a plant!

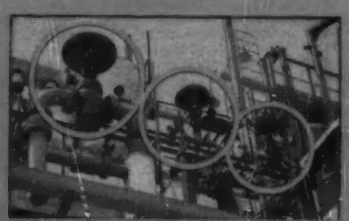
Next time you have a project in the planning stage, why not discuss the controls aspect of it in *strictest confidence* with our representative to be sure you get the *very best* controls for the job to be done?

For Better Regulation of Pressures, Temperatures, Liquid Levels or Flow, Equip Your Process With BS&B AUTOMATIC CONTROLS and SAFETY HEADS!

EFFICIENCY OVER 60 YEARS BS&B RELIABILITY ANOTHER EXAMPLE OF PRODUCT LEADERSHIP



These six Type 86's, also with bolted stuffing boxes, are controlling the flow of fuel gas to the still heater in the Hydrocarbon Recovery Section of the plant.



These three BS&B Control Valves are on ethylene service in the Ethylene Section of the plant. On the left is a BS&B Type 73 DC Pressure Balanced Control Valve. In the center is a Type 86 with Finned Cooling Section and Jumbo Diaphragm. On the right is a Standard Type 86 with Large Topworks.

BLACK, SIVALLS & BRYSON, INC.

Controls Division, Dept. 4-EH55

7500 East 12th Street Kansas City 26, Missouri

Handling & Packaging

Feeders, Dry Chemical—Ramps

Feeders, Dry Chemical.....The simple operating principle of the Type E dry chemical feeders assures high accuracy...efficiency...and freedom from mechanical difficulties. Information in Bulletin No. 215-A.
248A Infilco Inc.

Feeders, Dry & Liquid.....Equipment package is complete solution to difficult feeding problems—adaptable to all types of feeding and proportioning requirements. Complete information contained in Bulletin BIF-K7.
248B Omega Mach. Co.

Feeders, Liquid.....Rotodip liquid feeders accurate within 1% by volume. Infinitely adjustable over 100 to 1 range. Adaptable for handling corrosive liquids—simple, dependable. Descriptive Bulletin 65-H12.
248C Omega Mach. Co.

Feeders, Rotary.....Describes the new, completely sealed rotary feeder for pressure or vacuum feed & the standard unit employing brass half seals for normal feed. Bulletin includes plan and elevation drawings.
248D Beaumont Birch Co.

Feeders, Volumetric.....Volumetric feeders of simple design and rugged construction, easily adapted to installations requiring proportional pacing by auxiliary meters. Describes feeders in Bulletin 45-H8.
248E Omega Mach. Co.

Feeders, Weighing.....Never before has a weighing feeder attained the accuracy of the Omega Hi-Weigh—the new feeder with the revolutionary Sens-A-Gram Controller. Complete details in Bulletin No. 37-M1.
248F Omega Mach. Co.

Feeders, Wet Reagent.....Accurately meter minute quantities of liquid from 0 cc to 2000 cc per minute. Float valve in tank permits connection of feeder to bulk storage device. Data in Bulletin F6-B9.
248G Denver Equipment Co.

Feeder-Weigher-Conveyors.....Extremely accurate & durable weighing & feeding machines...for wide variety of industries. Use in cement & process industries, capacities, etc., in illustrated Bulletin No. 100-53.
248H Schaffer Poidometer Co.

Feeder-Weighers.....A self-contained, dust-tight, belt-feeding and weighing unit. Accuracy-indicating for process or intermittent batch weighing of lumpy, crushed, sluggish materials. Bulletin No. 1549.
248I Richardson Scale Co.

Feeder-Weighers.....Data on self-checking, automatic feeder-weighers for large tonnage; practically continuous stream delivery. Beam system has approval of all weighing authorities. Request Bulletin No. 2140-2.
248J Richardson Scale Co.

Filers, Liquid.....Rotary, gravity type liquid filiers...used for applications involving liquids and semi-viscous materials. Presents Dura-Mil Bulletin describing the features, operation, applications, etc.
248K Turbo Mach. Co.

Formalin Handling.....Revised Manual covers storage, handling, analysis methods, safety precautions, temperature effects, and all other vital information for users of Formalin. Copies available upon request.
248L Celanese Corp. of America.

Gratings, Floor.....In both size and type . . . there is a Kerrigan Keldforged grating for every requirement. Makes available illustrated Catalogs containing full information. Also a desk-size grating sample.
248M Kerrigan Iron Wks.

Handling & Storage, Bulk Chemicals..... New 24 p. reference, "Chemicals—Handling and Storage," describes and illustrates Sauerman storage machines in use at a variety of installations. Booklet MMM No. 2.
248N Sauerman Bros.

Hoist Controls, Magnetic.....Details on magnetic type control devices for overhead cranes. Permit more precise, easier, smoother hoisting & lowering of light as well as full loads. Bulletin Sect. 300—Unit 78.
248O Whiting Corp.

Hoists, Electric.....New units range in capacity from 500 to 4000 lbs. with a choice of lifting speeds and types of suspension. Features, specifications, dimensions, etc. contained in illustrated Bulletin CQ.
248P Coffing Hoist Co.

Hoists, Skip.....Sequence views of operation of weigh type & plug feed loading gates, capacites of various size buckets . . . travelling various heights at various speeds, etc., in 16 p. illustrated Bulletin 110.
248Q C. O. Bartlett & Snow Co.

Idlers, Suspension.....Covers neoprene belt conveyor idler of cable suspension type which resists most chemicals, has excellent resistance to abrasion, does not deteriorate in oil, etc. Bulletin No. LD-103E.
129g *Joy Mfg. Co.

Labelers, Single.....Designed to provide an efficient automatic labeler of the simplest constuction with as few parts as possible. Covers construction and specification details in illustrated Bulletin 950-S.
248R Standard-Knapp Div.

Lift Units, Fork Truck.....Enable the fork truck to lift a 2000 lb. load to 130" in only 23 seconds and to lift the empty forks to 130" in only 16 seconds. Request Twin-Lift Circular for complete details.
248S Lewis-Shepard Products.

Liquids Handling Equipment.....Features, advantages & specifications of full line of liquids handling equipment for petroleum, chemical, mine, railroad & construction industries. Illustrated Bulletin No. 63.
248T George D. Ellis & Sons.

Loading Assemblies.....Two complete lines for faster, safer, more convenient liquids handling. Sizes, engineering data & specifications on a spring-balanced & counter-balanced loading assemblies in Catalog F-7.
248U OPW Corp.

Loading Machines, Pallet.....Bulletin describes and illustrates the unique adaptability of the Series "200" machine. Photographs show it performing a number of palletizing operations. Lists general specifications.
248V Alvey Conveyor Mfg. Co.

Magnets.....All Eriez magnets are non-electric, self-contained. They operate without wires or attachments. Magnetic power lasts a lifetime—the first cost is the last. Request booklet, "Magnetic Ideas."
248W Eriez Mfg. Co.

Need some equipment?

Then you'll find this issue's Inventory of New Equipment right up your alley. It's a digest of the past year's major new developments in process equipment, the first complete roundup of its kind. You'll find it a handy tool for years to come (p. 123).

Magnets.....Describes the line of electric and non-electric magnet for installation in, on or above material conveying systems and integration with processing machinery. Full details in Catalog C-5000-B.
248X Dings Magnetic Separator.

Magnets, Grate.....The Eriez grate magnet prevents tramp iron damage to valuable equipment . . . and prevents product contamination to free-flowing foods, chemicals, etc. Request Bulletins B-204 and B-214.
248Y Eriez Mfg. Co.

Magnets, Spout.....For plant safety and product purification...reduce explosion, fire and equipment damage, cut insurance rates with electro or permanent spout magnet. Valuable data in Bulletins Nos. 92F, 97E.
248Z Stearns Magnetic.

Magnets, Suspended.....Eliminate the hazards of tramp iron . . . with a Dings RM suspended tramp iron magnet. Makes available complete information on the protection afforded by company's product line.
248AA Dings Magnetic Separator.

Magnets, Suspended.....Rectangular suspended separation magnet cures tramp iron headaches on fast-moving conveyors, particularly when material is wet. Find complete product information in detailed Bulletin 25D.
248BB Stearns Magnetic.

Materials Handling.....Makes available a Brochure describing an exciting new experiment in materials handling teaching techniques—the second annual Material Handling Training Conference. Illustrated, 12 p.
248CC Material Handling Training.

Materials Handling, Bulk.....Tote System speeds up weighing & blending operations, automatically, accurately; reduces labor & handling costs; eliminates product loss, contamination; etc. Illustrated.
248DD Tote System.

Materials Handling, Bulk.....32 p. covers various types of equipment for handling coal, ore & other bulk materials. Data on ore & coal bridges, man trolley unloaders, rope-operated towers, etc. Fully illustrated.
248EE Dravo Corp.

Materials Handling, Bulk.....One unit feeds, conveys, elevates thru horizontal, vertical or inclined planes—quickly, efficiently, economically. Request idea book on engineered materials handling systems.
248FF Gifford-Wood Co.

Materials Handling, Bulk-Flo.....Equipment designed to reduce handling costs on wide range of materials. Features ability to feed, convey, elevate in one compact, fully enclosed assembly. 28 p. Book 2475.
248GG Link-Belt Co.

Materials Handling Equipment..... Cut production costs and improve quality control with dependable Gump-built units—rotary sifters, feeders, barrel packers, net weighers. Request descriptive Catalog.
304a *B. F. Gump Co.

Materials Handling Equipment.....Offers fully illustrated 20 p. Catalog describing principal products of the Pressed Steel Division. They include steel boxes, skids, pallets, foundry flasks, stampings. Adv. 620.
248HH Republic Steel Corp.

Packaging.....Describes how the company is prepared to handle research, design & testing of any type of product packaging, & carry the project thru the actual production packaging, final crating & shipping.
248II Webhart Corp.

Packaging.....Company presents upon request a new Brochure entitled "The Door to Better Packaging." It furnishes interesting details of the numerous tests used to maintain carton quality and economy.
248JJ Ball Bros. Co.

*From advt., this issue

Packaging.....“Evaluation Check List” offered to help users of shipping containers analyse the “ABC” of their packaging. Provide keys to learning how containers rate for appearance, best economy and construction.
249A Stone Container Corp.

Packaging.....Offers 32 p. fully-illustrated booklet entitled, “How To Pack It.” Describes a unique selection of twelve different styles and more than seventy types of corrugated boxes for a variety of products.
249B Hinde & Dauch.

Packaging, Butyrate Peelable Plastic..... 12 p. outlines application of Eastman’s butyrate peelable plastic in hot melt dipping of various parts used by automotive & aviation industries, machine shops, etc.
249C Eastman Chem. Products.

Packaging Machines.....Describes new improved units for packaging of a wide variety of free-flowing & mixed materials not suitable for volumetric filling. Covers operation, features, design, etc., in Bulletin 4966-W.
249D Stokes & Smith Co.

Packers, Bottle & Can.....Furnishing a smooth continuity of operation from processing equipment to shipping case ...packers load bottles or cans safely, quickly, and economically. Details in illustrated, 8 p.
249E Standard-Knapp Div.

Packers, Carton.....Offers data on collectors & packers for cartons, bags & cans. Includes description, summary of advantages, general packer characteristics, etc., in completely illustrated Bulletin No. 800-2.
249F Standard-Knapp Div.

Panels, Pulsating..... Assure constant material flow from your bins & hoppers . . . with dependable, safe, economical, quiet PneuBin pulsating panels. Request “Flow Stoppage” & descriptive literature.
285 *Gerotor May Corp.

Phenol Handling.....32 p. Booklet covers complete information on unloading tank cars, unloading small containers, sampling, storing, transferring, etc. Complete with charts, graphs, illustrations, etc.
249G Monsanto Chem. Co.

Platforms, Custom Work.....Illustrated Folder covers all-steel portable and stationary platforms custom-fitted to each work requirement. Usage results in increased production, safety, and convenience.
249H Ballymore Co.

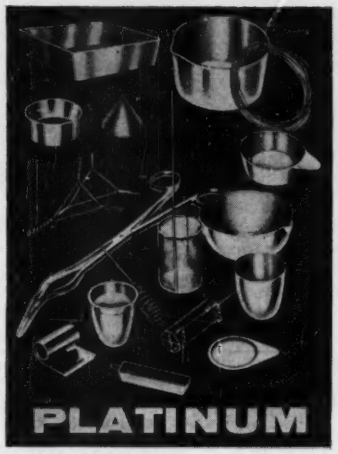
Pulleys, Magnetic.....Magnetic pulleys protect equipment in a coal preparation plant against bolts, spikes, cutter bits and other stray iron. Find complete information on pulleys in Bulletin No. C-5000-B.
249I Dings Magnetic Separator.

Pulleys, Magnetic.....New reference includes applications, features, diagrams, performance data, specifications and a guide for selecting the proper size. Request this valuable 8 p. Bulletin No. PY-260.
249J Homer Mfg. Co.

Pulleys, Magnetic.....Now offers a powerful new electro-magnetic pulley that provides exceptional tramp iron removal throughout the entire load mass. Features advantages of 2-coil design. Data in Bulletin 303-C.
249K Stearns-Magnetic.

Racks, Hopper.....Describes and offers complete specifications on the new NesTier hopper rack. Versatile unit increases efficiency of small parts handling in assembly & production operations. Bulletin HR-101.
249L Chas. Wm. Doepke Mfg.

Ramps.....New 4 p. Booklet features complete engineering details & other information concerning the use & installation of hydraulic adjustable ramps for loading docks. Two types described & illustrated.
249M Rowe Methods.



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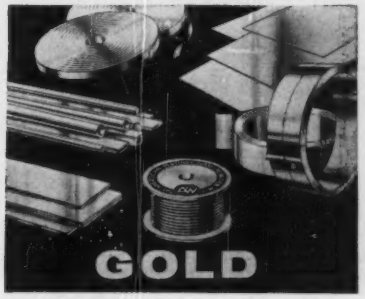

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THE AMERICAN PLATINUM WORKS

PRECIOUS METALS SINCE 1875

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Handling & Packaging

Ramps, cont.—Transport Bodies, Bulk

Ramps.....New illustrated Catalog Sheet details 10,000-lb.-capacity manual floating hydraulic adjustable dock ramp. Includes photos and engineering drawing, operating and design features, specifications.
250A Rowe Methods.

Rinsers.....Meet every requirement for high speed, low cost preparation of new bottles or jars for delivery to process equipment. Describes operation and numerous advantages in fully illustrated Bulletin 68-2.
250B Standard-Knapp Div.

Scales.....Accommodate screw, belt, or vibrating feeder for handling wide range of materials. Dust-tight, solenoid- or motor-operated discharge, accuracy-indicating. Offers full details in Bulletin No. 1449.
250C Richardson Scale Co.

Scales.....Bulletin offers data on a dust-tight, all-electric, high-speed, accuracy-indicating scale for weighing dry, ground, granular, dusty, non-free-flowing and some small lumpy materials. No. 3649.
250D Richardson Scale Co.

Scales.....In company's complete line there is a modern answer to every problem of industrial weighing—in standard, or in custom-built units. For full details, request new Condensed Catalog No. 2001.
250E Toledo Scale Co.

Scales, Automatic Filling.....Model 600G automatically holds, fills, checkweighs, releases bags of powdered materials within close tolerances. Offers complete description, performance data, specifications, etc.
250F Thayer Scale & Engrg. Corp.

Scales, Bagging.....Complete details on improved GGG-38 bagging scales. Includes lists of 7 specifications and 5 features plus a photograph of the unit and a dimensioned engineering drawing. Data Sheet No. 5401.
250G Richardson Scale Co.

Scales, Checkweight.....Suspended conveyor scale check-weighs open or closed packages weighing up to 200 lbs. at rates up to 16 a minute. Covers description, performance & specifications of Model 100S.
250H Thayer Scale & Engrg. Corp.

Scales, Checkweight.....Rugged production instruments . . . designed for continuous production line checkweighing. Covers description, performance and specifications on Model Nos. 200S and 200R.
250I Thayer Scale & Engrg.

Scales, Crane.....SR-4 is a convenient & rugged device for weighing objects at same time they are being lifted by a crane. Covers features, instrumentation, installation, etc., in illustrated 12 p. Bulletin 4304.
250J Baldwin-Lima-Hamilton Corp.

Scales, Filling.....Especially built for production weighing of granular, flake, pellet or fibrous materials. Covers details on features, performance and specifications for Models 1000G and 1000N. Illustrated.
250K Thayer Scale & Engrg.

Scales, Platform.....Describes new electric platform weighing scale...a modern platform scale adaptable for either batch weighing or continuous process control utilizing strain gauge load cells. Catalog No. 20.
250L Weighing Components.

Scales, Sacking.....Exact Weight sacking scales...sack, weigh, and check . . . in one operation. Simple to operate, have just two controls. Company furnishes complete information on Model No. 2229.
250M Exact Weight Scale Co.

Separators, Magnetic.....Complete magnetic pulley type separator automatically removes tramp iron before it can damage equipment, cause fires and explosions or contaminate products. Illustrated Catalog 602-4.
250N Magnetic Engrg. & Mfg. Co.

Separators, Magnetic.....Presents new, fully illustrated booklet covering line of non-electric permanent magnetic separators...for removal of tramp iron. Includes data on Magnalarm. 16 p. Catalog No. 17.
250O Eriez Mfg. Co.

Separators, Magnetic.....Ferrofilters remove contaminating ferrous particles from liquids and slurries by magnetic action with a maximum of efficiency and a minimum of cost. Request detailed Bulletin 16-E.
250P S. G. Frantz Co.

Separators, Magnetic.....New series of gravity flow & pneumatic hump non-electric permanent magnetic separators...offers more protection from tramp iron hazards in pipe & chute conveyor lines. Bulletin 275-A.
250Q Magnetic Engrg. & Mfg. Co.

Separators, Magnetic.....Illustrated, 16 p. contains information on company's magnetic separators and traps. Describes how they're made, how they work, the numerous advantages, maintenance, etc. Catalog No. M-554.
297b *Emerson Mfg. Co.

Separators, Magnetic Spout.....Drum-type magnetic spout separators eliminate tramp iron hazards. Remove destructive bolts, nails, tacks, etc. from your product—continuously, automatically. Bulletin No. 93-E.
250R Stearns Magnetic.

Silos, Storage.....Give valuable materials the protection they deserve in moisture-free, fire-safe, adaptable concrete stave silo storage systems. For complete details, request your copy of silo storage catalog.
250S Marietta Concrete Corp.

Sodium Handling, Metallic . . . . . Company announces the availability upon request of a valuable literature reference, "Handling Metallic Sodium." Comprehensive handbook covers equipment & handling procedures.
203-4u *U. S. Industrial Chem. Co.

Space Wheels, Fork Truck.....Show aisle width required for right-angle stacking with all types of fork trucks, area devoted to aisles in square ft., & savings made possible in cubic ft. of storage space. Illustrated.
250T Lewis-Shepard Products.

Stackers.....Describes in detail new electro-hydraulic platform & straddle stackers. Completely illustrated . . . contains specifications & data on these lightweight power-lift units. Handy Hoister Circular No. 28A.
250U Lewis-Shepard Products.

Storage Methods....."How to Double Your Warehouse Capacity" suggests sizeable savings of space & time are possible thru better use of existing facilities & use of special storage equipment. 16 p. Catalog 700.
250V Frick-Gallagher Mfg. Co.

Storage Systems, Slurry, Soda Ash..... Illustrated 16 p. Brochure explains how paper mills, steel mills, textile mills, etc. can effect economies in storing & handling soda ash in readily usable form as a slurry.
250W Diamond Alkali Co.

Tank-Trailers.....For the fast movement of raw materials in full or partial loads, wherever & whenever needed, eliminating costly delay, reducing need for expensive inventories of supplies, etc. Illustrated.
250X Freuhauf Trailer Co.

Tanks.....Stainless steel tanks for your processing—maintain stock or fabricate to special designs for your particular need. Any size—any capacity up to 3000 gallons. Illustrated literature offers details.
250Y Filpaco Industries.

Tanks.....Construction, dimensions, specifications & prices given for bolted steel tanks, bolted steel thickener tanks, bolted steel tray tanks, welded steel tanks & wood tanks, in 16 p. illustrated Bulletin No. T2-B5.
250Z Denver Equipment Co.

Tanks, Bulk Storage.....For storage of solvents, resins, alcohol, petroleum & chemical products. New booklet contains essential information including available stock sizes, capacities weights, dimensions, etc.
250AA Graver Tank & Mfg. Co.

Tanks, Glassed Steel.....New reference furnishes valuable information on Pfaudler Utilitanks . . . the amazing industrial storage tanks that won't rust because they're glassed inside & out. Bulletin No. 916.
141d *Pfaudler Co.

Tanks, Glassed Steel.....Tells how you can store chemicals at an original investment as low as 25¢ per gallon, with new "Chemstor" glassed steel tanks, and offers data on all sizes, in descriptive Bulletin No. 918.
250BB Pfaudler Co.

Tanks, Storage.....Describes new glass reinforced plastic storage tank . . . that is absolutely impervious to all corrosive elements. Includes advantages, assembly details, specifications, etc. Fully illustrated.
250CC Plastic Products Corp.

Tractor-Loaders.....Describes a rubber-tire tractor-loader with a standard bucket capacity of 1½ cu. ft. Designed for the economical handling of bulk chemicals, sand, dry materials, castings, scrap, etc.
250DD Baker-Lull Corp.

Tractor-Loaders.....Feature the numerous advantages of loading with the combination of clutch-type transmission and hydraulic torque converter. Company provides completely detailed literature on the TL-10.
250EE Tractomotive Corp.

Tractor-Shovel Attachments....."Useful Attachments for Payloader Tractor Shovels" illustrates and describes rotary "V" and trip-blade snow plows, hydraulic back-hoe, lumberlog rack, backfiller blade, etc.
250FF Frank G. Hough Co.

Tractor-Shovels.....Provide easier operation, utmost accessibility & simplicity of servicing, highest efficiency in shovel handling. Valuable Fact-Folio includes specifications, action photographs, etc.
250GG Clark Equipment Co.

Tractor-Shovels . . . . . Feature exceptional advantages—the ability to dig . . . to load fast . . . to maneuver . . . to handle any load . . . to work anywhere—any time. Request descriptive literature for details.
250HH Allis-Chalmers Mfg. Co.

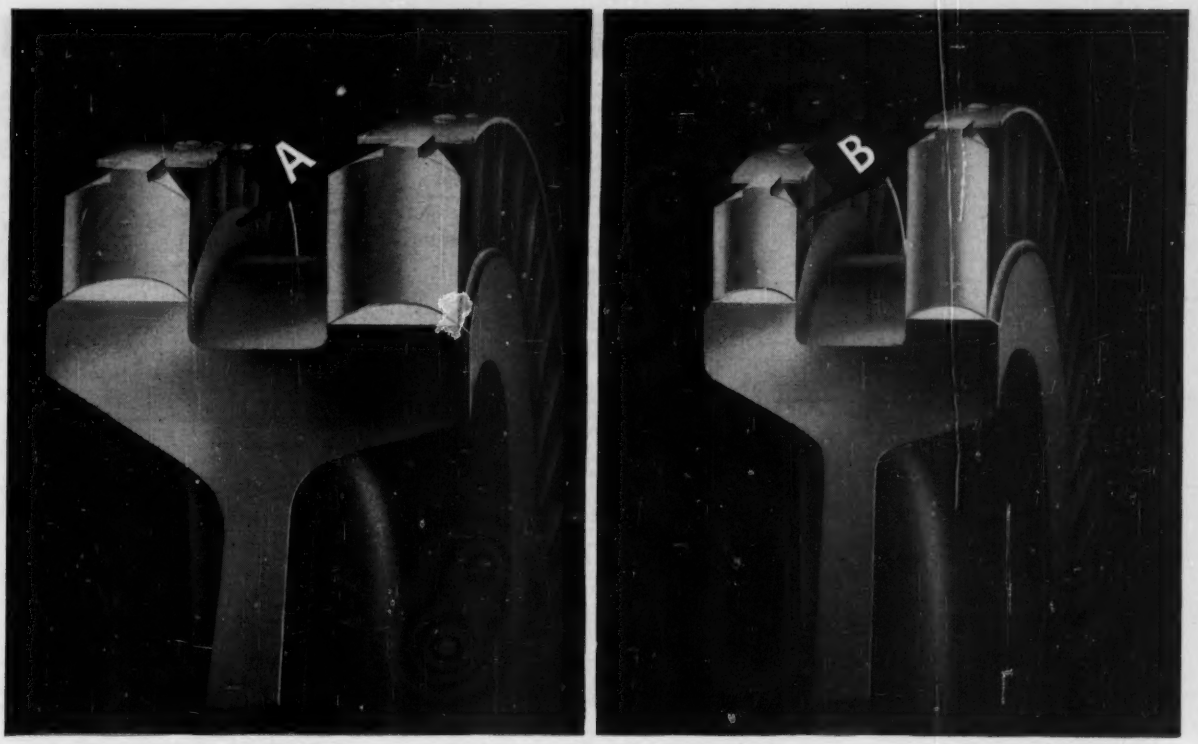
Tractor-Shovels.....Payloader line features full-reversing transmissions plus torque converter drive . . . for maneuvering speed, ease of control and a wide choice of operating ranges. Complete information.
250II Frank G. Hough Co.

Tractors, Electric.....Bulletins cover features of 4 wheel & twin-3 wheel models. Includes detailed specifications & illustrations along with line drawings showing dimensions. Nos. T-201, T-202, T-203, T-204.
250JJ Mercury Mfg. Co.

Tractors, Gasoline.....Describes and illustrates standard model (2,400 lb. draw bar pull rating) and heavy-duty model (3,000 lb. draw bar pull rating). Data on features and performance. Bulletins T-101, T-102.
250KK Mercury Mfg. Co.

Transport Bodies, Bulk.....Offers a new 6 p. reference describing the large-volume Bulkmobile transport body. Designed for the big jobs, new units save up to 75% on handling time. Full details in Bulletin A-399.
250LL Baughman Mfg. Co.

*From advt., this issue



(Left, A) wide bucket "L" type wheel. (Right, B) regular type wheel for Coppus Steam Turbines

Now . . . for low steam consumption – **COPPUS TURBINES** *can be furnished with wide bucket "L" type wheel*

Good news for steam turbine users where low steam consumption is important!

The Coppus Type "L" Wheel is the answer to this problem. Larger turbine buckets are employed to make the most economical use of steam.

In every respect the Coppus Turbine offers the top-quality features and advantages that have made the Coppus line outstanding for efficiency and economy. For example:

- Turbines rated close to your exact hp requirements, from 150 hp down to fractional. No need to buy a bigger, costlier turbine than your conditions call for.
- A larger number of steam nozzles, controlled individually by manually operated valves.
- Exclusive pilot operated excess speed safety trip supplementing constant speed governor.
- Replaceable cartridge type bearing housings.
- Optional carbon ring packing glands.

Coppus Steam Turbines ranging from 150 hp down to fractional, in 6 frame sizes, *make turbine dollars go farther.* Send for Bulletin 135 on Coppus Turbine.

COPPUS ENGINEERING CORPORATION
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Worcester 2, Mass.
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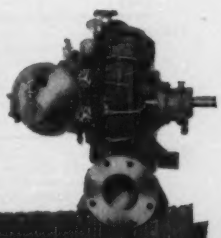
THOMAS' REGISTER



COPPUS "BLUE RIBBON" TURBINES

Handling & Packaging

Traps, Pipeline—Wrapping & Bundling

Traps, Pipeline.....Designed for efficient removal of unwanted iron and fines from almost all types of liquids flowing thru pipelines, Ferro-traps protect costly screens, pumps, mixers, etc. Bulletin B-605.
252A Eriez Mfg. Co.

Truck Attachments, Fork.....Describes clamping forks with drum up-ender for use with Spacemaster electric fork trucks. Explains what it does, how it works, capacity, construction, etc. Fully illustrated.
252B Lewis-Shepard Products.

Truck Operation, Fork.....Makes available informative reprint, "Proper Operator Judgment Cuts Cost of Fork Truck Operations." Literature proves extremely valuable to any firm which makes use of fork trucks.
252C Mercury Mfg. Co.

Truck Operation, Industrial.....Do's and don'ts of safe operation of industrial trucks are detailed in new available literature—31 rules for effective, safe operation of trucks are pictured and/or discussed.
252D Elwell-Parker Elec. Co.

Trucks, Dragline.....New Circular covers Floormaster Dragline trucks for both in-floor and overhead conveyor lines. Contruction data, engineering highlights, installation photos, specifications, etc. No. 29-A.
252E Lewis-Shepard Products.

Trucks, Drum.....Designed for use with drums which can be drained only in a vertical position. "Rock-a-Drum" picks up heavy drums & rolls them over to reverse up-right position for dispensing. Bulletin No. 949.
252F Morse Mfg. Co.

Trucks, Drum.....Rotator drum truck—a powerful, compact, portable, motorized unit—safety rotates standard drums at 10, 20 or 40 rpm with loads up to 500 pounds. Complete details contained in Bulletin R-1248.
252G Morse Mfg. Co.

Trucks, Electric.....24 p. covers full line of electric trucks. Features battery-powered, rider-type trucks, for 6-ft. aisle operation, together with attachments available for special applications. Illustrated.
252H Raymond Corp.

Trucks, Fork.....Provides information on the new Safety Silhouette electric fork trucks...designed primarily for operating in close quarters. Covers features, dimensions, specifications, etc. Illustrated Bulletin 5001.
252I Yale & Towne Mfg. Co.

Trucks, Fork.....Presents two new circulars describing the Model "M"—a high lift electric straddle type fork truck. Designed for 6'-0" aisle operation, available in "articulated" & "narrow" styles. Illustrated.
252J Lewis-Shepard Products.

Trucks, Fork.....Illustrated Bulletin describes all the features, specifications & dimensions of the new Yale Warehouser Electric Truck with Extend-A-Forks. This feature permits stacking with no straddling of the load.
252K Yale & Towne Mfg. Co.

Trucks, Fork....."Facts About Fork Trucks—The Gas vs. Electric Question" presents an objective study of capabilities of gasoline & electric powered fork trucks operating under normal conditions.
252L Lewis-Shepard Products.

Trucks, Fork Lift.....Company announces the availability upon request of a brochure which describes the advantages of liquefied petroleum gas (LP Gas) power for industrial fork lift trucks. Illustrated, 4 p.
252M Clark Equipment Co.

Trucks, Industrial.....Describes Yale gasoline, diesel and LPG industrial lift trucks in capacities ranging from 1000 to 10,000 lbs. Includes cutaway photographs which show valuable features. Bulletin 5101C.
252N Yale & Towne Mfg. Co.

Trucks, Industrial.....''Modern Material Handling'' covers unit-load principle, power requirements of industrial trucks & characteristics of Edison nickel-iron-alkaline storage batteries. Fully illustrated, 32 p.
252O Thomas A. Edison, Inc.

Trucks, Industrial.....Announces 8 p. condensed catalog illustrating and describing company line of power industrial trucks. Includes sections on Elpar fork trucks, high & low-lift platform trucks & crane trucks.
252P Elwell-Parker Elec. Co.

Trucks, Industrial, Aluminum.....Company announces the availability of a new, illustrated Data File which describes the weight, flexibility, and caster advantages of their line of aluminum industrial trucks.
252Q Magnesium Co. of America.

Trucks, Lift.....Describes & illustrates unique side-loading lift trucks designed to handle long, bulky loads. Includes data on features, applications & attachments, dimensions & specifications. Bulletin 1360.
252R Baker-Rauling Co.

Trucks, Pallet.....The moving and storing of numerous types of multi-unit loads by company's line of pallet hand lift trucks, fully described and pictured in new colorful literature. Request 12 p. Brochure P-673B.
252S Yale & Towne Mfg. Co.

Trucks, Pallet.....Describes new lightweight hydraulic pallet trucks for use with single face pallets, double face pallets & skid platforms. Covers features, construction, specifications, etc. Circular No. 26A.
252T Lewis-Shepard Products.

Trucks, Platform.....Equipment and Development Release made available describing company's 7500 pound capacity Worksaver Lowlift platform truck. Includes full specifications and dimensions. Release ED-25.
252U Yale & Towne Mfg. Co.

Trucks, Platform.....New Bulletin Illustrates & furnishes dimensions, specifications & outstanding features on Yale 4,000 and 6,000 pound capacity Worksaver low lift electric platform trucks. Bulletin P-1038A.
252V Yale & Towne Mfg. Co.

Unloaders, Box Car.....New type of box car unloader, with automatic power scoop...unloads cars on either of two tracks in approximately one-half man-hour per car. Full details in illustrated Bulletin 1654.
252W Stephens-Adamson Mfg. Co.

Vibrating Equipment.....Presents 232 p. fully illustrated catalog—a complete and concise reference book covering electric and mechanical vabrating equipment, and magnetic separators. Request Catalog No. 870.
252X Jeffrey Mfg. Co.

Vibrators.....Installation of the company line of vibrators for smoother, more efficient materials handling... for granular or powdered chemical materials. Makes available detailed literature upon request.
252Y Cleveland Vibrator Co.

Waste Treatment Packages.....Company makes available upon request reference, "Industrial Waste Treatment Guide" (Bulletin No. B1F-4A)—covers essential information on Omega waste treatment packages.
252Z Omega Mach. Co.

Weighing Units.....Versatility and dependability have established the Schaffer Poidometer as the top-flight weighing unit for handlers of raw and finished bulk materials. For details, see Catalog No. 15.
310 *Schaffer Poidometer Co.

Weight-Control Systems.....Announces a new remote weight-control system ...for continuously & accurately blending additives with process material. Features & advantages covered in Technical Reference 54D.
252AA Richardson Scale Co.

Wrapping & Bundling.....Covers numerous subjects: "What is Wrapping & Bundling"; "Classification of Wrapping Methods"; "Types of Wrapping Materials"; "Selection of the Right Machine." Bulletin No. 25.
252BB Paisley Products.

Heating & Cooling

Air Conditioners.....Describes how equipment produces precise control of air temperature & moisture enabling manufacturers to make their products in any climate & at any season, in illustrated Bulletins 112 & 122.
273a *Niagara Blower Co.

Air Conditioning Units.....Full data on improved self-contained units with capacities from 3 to 20 tons. Line diagrams, wiring diagrams, capacity tables, examples of unit selection, etc. 24 p. Bulletin No. DS-362.
252CC Trane Co.

Air Conditioning Units.....Heat-pumps are year-around air conditioning units which heat in the winter and cool in summer. Advantages, types, capacities, dimensions, etc., in illustrated Bulletin FT-50-A.
252DD Acme Industries.

Baffles, Boiler.....Illustrated 20 p. offers data on modern boiler baffles & how they are designed for the streamlined flow of the gas of combustion over the heat-absorbing surfaces. Bulletin No. BW-54.
252EE Engineer Co.

Blast Coils.....Company's line of Grid blast coils are ideal for numerous uses throughout the chemical processing industry. For complete information on features and performance request Catalog No. BC-1049.
252FF D. J. Murray Mfg. Co.

Boiler Blowoff Equipment.....Describes how automatic continuous blowoff equipment successfully meets demands of modern boilers. Offers economy of fuel, smaller quantity of blowoff, etc. Illustrated Bulletin 2391A.
252GG Permutit Co.

Boilers.....Provide superior boiler performance...for steam or hot water 15 to 40 hp (15 to 150 lb. steam, 30 lb. water). For commercial, industrial, and institutional use. Details in illustrated Bulletin AD-134.
252HH Cleaver-Brooks Co.

Boilers.....Illustrated, 32 p. contains latest, most authentic and complete information on entire company line of high and low pressure steel boilers for commercial, industrial and residential use. Catalog No. 80.
252II Kewanee-Ross Corp.

Boilers.....Describes "S" series of boilers. Complete data & specifications given on each of models & sizes in line, with capacities ranging from 10,800 to 50,000 lbs. of steam per hr. Illustrated Brochure WT-8.
252JJ Wm. Bros Boiler & Mfg. Co.

Boilers.....Completely covers CB boilers which are available in 50 to 80 hp (15 to 150 lb. steam, 30 lb. hot water) for heating & processing. Includes data on major advantages. Illustrated Bulletin AD-135.
252KK Cleaver-Brooks Co.

Boilers, Automatic.....Describes operation & advantages of "Spinning Gas Technique"—a method of obtaining maximum heat transfer with a simplified design. Shows cutaway view of construction. Bulletin BE-4.
252LL Boiler Engrg. & Supply Co.

*From advt., this issue

Boilers, Integral-Furnace . . . . . Boilers of every type & rating, & covering an unusual range of steam requirements, are service-proved—combine lower steam costs with higher service life. Offers illustrated Bulletins.
23 *Babcock & Wilcox Co.

Boilers, Packaged.....Available for oil, gas and combination oil/gas firing. Sizes 15 to 500 hp, 15 to 250 psi—for heating and processing. Company furnishes fully illustrated Catalog No. AD-100 on request.
253A Cleaver-Brooks Co.

Boilers, Packaged.....Especially suited to industrial heat processing applications because they're designed & constructed for continuous lifetime service with low maintenance & maximum safety. Bulletin A-104.
253B Eclipse Fuel Engrg. Co.

Boilers, Packaged . . . . . Solve steam problems quickly with Bros packaged boilers. New colorful catalog contains design features, construction details, drawings and specifications of Types W-1, W-2 and W-3.
260 *Wm. Bros Boiler & Mfg. Co.

Boilers, Packaged.....Covers operation and specifications on Type 1, 2 and 3 packaged boilers built to meet steam requirements in medium pressure range, from 4100 to 30,000 lbs. of steam per hr. Brochure WT-7.
253C Wm. Bros Boiler & Mfg. Co.

Boilers, Packaged Automatic.....Offer valuable features: low-cost, space saving installation; fast steaming; instant response to load changes; quick fuel change-overs; clean, dry steam; etc. Bulletins 1220 & 1223.
253D Orr & Sembower.

Boilers, Steel Firetube.....Offers full information on Kewanee Reserve Plus Rating Plan in booklet titled, "A Report to Those Concerned with the Specification, Selection, Sale of Steel Firetube Boilers."
253E Kewanee-Ross Corp.

Burners.....Completely illustrated Bulletin describes line of heavy-oil burners—belt driven horizontal rotary type, 7½ to 175 gal. capacity. Data on features, operation, specifications, etc. No. 175-H.
253F Preferred Utilities Mfg.

Burners.....For rotary sand and stone dryers and rotary calcining kilns—burn oil or combination gas and oil using low pressure air. Describes features, capacities, dimensions, etc. Illustrated Catalog 414.
253G Hauck Mfg. Co.

Burners.....For automatic firing of boilers, heaters & other process jobs requiring up to 3,000,000 BTU—bring true "rotary combustion" for maximum heating efficiency with gas or oil fuels. Bulletins R-100, R-230.
253H Eclipse Fuel Engr. Co.

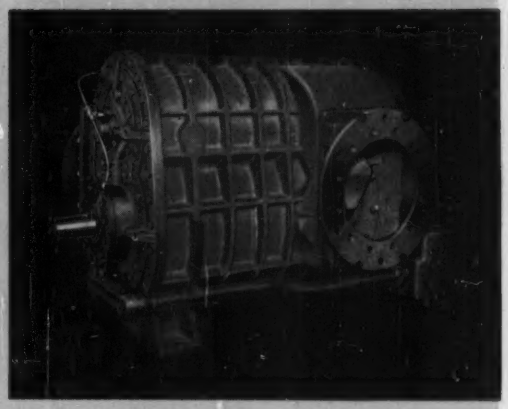
Burners.....Completely illustrated, 28 p. describes line of industrial oil & gas burner equipment for all types of furnaces & kilns. Covers liquid fuel atomizers, gas burners, air registers, etc. Bulletin No. OB-53.
253I Engineer Co.

Burners.....Thousands of burners, in chemical industries, have speeded up and improved many heating processes. 80 types and 800 sizes completely described and rated in detailed Catalog. Literature H54-16.
253J Surface Combustion Corp.

Burners.....Describes line of combination oil and gas burners for radiant tube firing in controlled atmosphere furnaces. Includes data on features, capacities, dimensions, etc., in illustrated Data Sheet No. 1-415.
253K Hauck Mfg. Co.

Burners, Oil.....Makes available an illustrated bulletin describing company line of high velocity oil burners. Includes operating principles, applications, dimensions, and output data. Request Bulletin No. 107.
253L Thermal Research & Engrg.

THE Standardaire® Blower



handles a wide range of compression smoothly, evenly

Standardaire's smooth, even compression is achieved by employing a proved principle of compressing gas or air on a modified adiabatic cycle. Cycloidal form screw type rotors discharge gas or air without shock from the pockets formed between the rotor blades.

Compactly designed, the *Standardaire Blower* needs no heavy reinforced flooring, foundations or piping anchors, while handling a wide range of compression at a very low noise level.

Write today for Standardaire's Bulletin B-154.

READ STANDARD CORPORATION

BLOWER-STOKER DIVISION
370 Lexington Avenue
New York 17, New York

Read Standard also manufactures a complete line of blenders for laboratory and industrial use. For further information write, Read Standard Corp., York, Pa.

Heating & Cooling

Burners, Packaged, Forced Draft— Generators, Steam

Burners, Packaged, Forced Draft..... Built to specifications for Scotch Marine type boilers & other types of heat receivers designed for pressurized operations, for oil, gas or combination gas-oil firing. 6 p.
254A Ray Oil Burner Co.

Burners, Piloted Entrainment.....Covers valuable information concerning features, construction, and specifications. Also included in the Bulletin are diagrams, charts and photographs. 4 p. No. H-64.
254B Eclipse Fuel Engrg. Co.

Burners, Tunnel.....For use with any complete gas/air mixture up to 10" MP. Made in 3 sizes: 4", 5" and 6" with flanged connections. Includes full description, dimensions and capacities, etc. in Bulletin H-65.
254C Eclipse Fuel Engrg. Co.

Chillers, Liquid.....Broad fields of air conditioning and refrigeration applications for the versatile line of Flow-Cold packaged liquid chillers described in new, illustrated reference. Bulletin No. FC-50-C.
254D Acme Industries.

Chillers, Liquid.....The flexibility of the Acme Flow-Therm liquid chiller for air conditioning, heat pump & industrial liquid cooling applications is explained in new reference. Request Catalog No. 220-A.
254E Acme Industries.

Chillers, Liquid.....Advantages shown for Thru-Tube construction include: controlled high refrigerant velocity, low refrigerant pressure drop, positive oil return, etc. Full details in 8 p. Catalog No. 600.
254F Acme Industries.

Chillers, Liquid.....Designed for air conditioning & industrial application, line of liquid chillers range from 7½ to 150 hp in a variety of models & combinations. Details in illustrated Bulletin No. C-1100-B52.
254G Worthington Corp.

Chillers, Package.....Introduces a new line of package chillers for chilled water air conditioning systems, drinking water or beverage cooling applications & industrial water cooling uses. Descriptive Bulletin.
254H Heat-X-Changer Co.

Chillers, Water, Packaged.....Complete information, including capacity tables and roughing-in dimensions, on Cold Generators, the Trane line of packaged water chillers, available in Bulletin No. DS-352.
254I Trane Co.

Condensate Drainage Control.....C-B system of condensate drainage control—removes condensate, air & non-condensible gases from processing equipment or any condensing medium with jet speed. Publication 6025.
254J Cochrane Corp.

Condensers, Barometric.....Condensers are designed to produce a high vacuum, condense steam, and remove air and other non-condensable gases. For complete information on company's line, request Bulletin No. 5-AA.
254K Schutte & Koerting Co.

Condensers, Evaporative.....Reference describes new design with a cutaway illustration & full construction details. Includes performance curves for selecting units to use with either freon or ammonia. Request Catalog No. 500.
254L Acme Industries.

Condensers & Reboilers.....Standard stainless steel vapor condensers & Thermosyphen reboilers designed to meet the exacting requirements of the chemical & process industries. Full details in illustrated, 8 p.
254M Doyle & Roth Mfg. Co.

Condensers, Sea-Water.....Detailed bulletin provides information concerning company's double-tube, counter-flow sea-water condenser . . . for marine use and all other "bad water" conditions. Bulletin No. C-4.
254N Halstead & Mitchell.

Condensers, Steam.....Company's revised 24 p. Catalogue features informative sections on: installation; engineering; air removal equipment; maintenance; steam condenser specialties; etc. Illustrated.
254O Condenser Service & Engrg.

Condensers, Vapor ..... Providing high vacuum, independent of a large supply of cooling water. Solves problems of water supply & disposal. Fully automatic. Saves power—saves steam. Details in Bulletin. No. 129.
273i *Niagara Blower Co.

Condensing, Refrigerant ..... Data on evaporative refrigerant condensers offering protection against scaling of tubes, controlling of compressor head pressures, saving condenser water. Bulletins 111, 123.
273h *Niagara Blower Co.

Coolers.....For efficient, economical product cooling . . . designed to meet highest standards of construction . . . engineered to provide greatest improvements in thermal design. Features & specifications.
254P Doyle & Roth Mfg. Co.

Coolers ..... Illustrated reference describes air & gas aftercoolers. Cool & remove water vapor & oil from compressed air. 125 to 7500 cfm capacity. Covers features, specifications, etc. Bulletin No. A-27C
129k *Joy Mfg. Co.

Coolers.....Offers full physical specifications & complete application data on Angle-Air coolers, from which it is easy to select the proper unit for each refrigeration application. Request Tenney Bulletin No. 109-55.
254Q Tenney Engrg.

Coolers ..... Describes equipment for cooling compressed air or gases, holding temperatures below ambient atmospheric to prevent condensation of moisture. Request Niagara Aero After Cooler Bulletin No. 130.
273g *Niagara Blower Co.

Coolers, Air-Quenching.....Information on how savings can be effected in the cement, lime and chemical industries through use of an air-quenching shaking grate cooler. Details in illustrated Bulletin No. 07B7869.
254R Allis-Chalmers Mfg. Co.

Coolers, Cascade.....Corrosion-resistance prevents chemical attack inside tubes and permits the use of river or sea water as coolant. Includes heat transfer nomographs, tables, etc., in Catalog No. PE-8.
254S Corning Glass Wks.

Coolers, Cascade.....Designed for cooling corrosive liquids and gases. Low initial cost and maintenance, radiused returns for low pressure drop as well as redwood waterguide strips. Request Catalog No. S-6820.
254T National Carbon Co.

Coolers, Rotary.....Ruggles-Coles rotary coolers employed for cooling hot materials after high-temperature drying or calcination. Three types: air cooled, partially submerged & spray types. Data in Bulletin 16-D.
254U Hardinge Co.

Coolers, Rotary.....Controlled cooling of hot materials with Traylor rotary coolers has enabled numerous processors to greatly increase production efficiency & quality. Bulletin offers complete details.
254V Traylor Engrg. & Mfg. Co.

Coolers, Sample Fluid ..... For sampling high temperature process fluids—reduce sample process fluid temperatures from 60°F to 100°F at pressures up to 1500 psi. Details in illustrated Catalog No. 2125.
339a *Young Radiator Co.

Coolers, Water.....Descriptive Bulletin provides information on line of instant water coolers. Includes operating principle, various applications, details of construction, etc. Fully illustrated. No. 153-1.
254W Frick Co.

Cooling & Freezing ..... Bulletins describe Niagara "No-Frost" method; production of extreme low temperature for industrial uses or food freezing, precooling & storage. Request Bulletins Nos. 95 & 105.
273e *Niagara Blower Co.

Cooling, Liquid ..... Cooling for chilled water or solutions, with elimination of freeze-up danger, with rapid chilling of large fluid volume and close temperature control. Request illustrated Bulletin No. 104.
273d *Niagara Blower Co.

Diffusers, Steam.....Illustrated Bulletin describes the new V-Groove steam diffuser...for introducing steam directly into the water for open-tank heating. Silent—no vibration—uniform heat distribution.
254X O'Brien Steam Specialty.

Drainers, Multiport.....Ball float type traps for automatic, continuous drainage of steam, air, gas lines or equipment under vacuum or positive pressures up to 200 psi. Find details in Publication No. 5201.
254Y Cochrane Corp.

Drying & Dehumidifying ..... Bulletins illustrate air conditioning cabinet and drying installations including siccative coatings, paper, plastics, provisions, confectionery, etc. Request Bulletins 88 & 112.
273f *Niagara Blower Co.

Exchangers.....Dependable source for engineering and manufacturing process equipment. Bulletin covers standard Sweco exchangers . . . and offers details of company's engineering and manufacturing services.
254Z Southwestern Engrg. Corp.

Exchangers, Film Type.....Offer economy of first cost, operation and maintenance in power, petroleum and chemical industries. Serve as jacket water coolers, feed water heaters, etc. Details in Bulletin HE-7.
254AA Henry Vogt Mach. Co.

Exchangers, Scraped Surface.....Closed pressure-type systems which permit use of flammable, volatile and expensive solvents with greatest safety and no danger of solvent loss. Details in Bulletin No. PE-1.
254BB Henry Vogt Mach. Co.

Freeze Drying Equipment ..... Designed for reliability and operator convenience, the complete Freeze Drying line includes laboratory, pilot plant and product sized models. Details in fully illustrated Bulletin.
71d *Naresco Equipment Corp.

Furnaces, Vacuum.....Supplies pertinent information on the company's new 30-pound induction-heated vacuum furnace. Includes data on the complete line of induction, resistance & arc furnaces in Naresco Catalog.
71e *Naresco Equipment Corp.

Generating Units, Steam.....Presents an illustrated Bulletin describing the company's steam generating and fuel burning equipment...for public utility and industrial power and heating plants. Request your copy.
254CC Riley Stoker Corp.

Generators, Steam.....Reliable, safe & completely portable shop-assembled water tube boilers of extremely simple & compact design. Covers design & construction, capacities, dimensions, etc. Bulletin No. PSG-1.
254DD Henry Vogt Mach. Co.

Generators, Steam.....Preferred Unit steam generators available in sizes from 20 to 600 bhp & pressures from 15 to 250 psi, to burn oil, gas or in combination. Describes 10 design features in Bulletin No. 2000.
254EE Preferred Utilities Mfg.

*From advt., this issue

You get more than a conveying system at

SPROUT-WALDRON

You get many *plus* values when you deal with Sprout-Waldron. In conveying systems, you get a wide choice of types, styles, and sizes. And all can be tailored to fit your needs by Sprout-Waldron's unique methods of "adaptioneering."

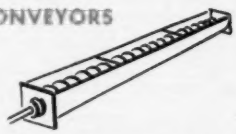
You also get reliable guidance on installations and applications from our engineering representatives and engineering staff. Their recommendations are based on long experience and backed by case history files of successful processing applications and laboratory tests.

DAVE SMYTH

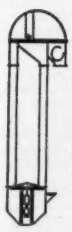
A member of Sprout-Waldron's Quarter Century Club, Dave Smyth has been serving the needs of his customers for 27 years. And before joining Sprout-Waldron, he served the processing industries through a mill supply house. Industrial America's biggest names have profited by Dave's assistance in solving problems. With such men to help you, you're bound to buy *right* at Sprout-Waldron.

SPROUT WALDRON

SCREW CONVEYORS



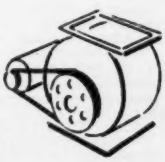
Sprout-Waldron vertical and horizontal screw conveyors are extremely low in maintenance and moderate in power requirements. Available in conventional helicoid, continuous sectional, and sectional types. Ask for literature.



BUCKET ELEVATORS

Sprout-Waldron offers bucket elevators in bucket sizes from 3" x 3" to 30" x 16"... wood, stainless steel, carbon steel, and aluminum . . . chain or belt, high speed or conventional. Write for full facts.

FEEDERS



You'll find the simplest, sturdiest, and easiest - to - maintain feeders at Sprout-Waldron. Ours is the most extensive line to be found anywhere. And the many years of experience we have gained through pioneering in this specialized field assures you of the greatest possible savings. Get details.

SPROUT-WALDRON

PNEU-VAC

pays ***11*** *ways*

1. **Increased production—greater safety.**
2. **99.96% material recovery.**
3. **Lower maintenance costs.**
4. **No product intercontamination.**
5. **No fan wear.**
6. **No infestation.**
7. **No handling losses.**
8. **Elimination of exterior dust.**
9. **Improved working conditions.**
10. **Small space requirements.**
11. **Horizontal, vertical, around corners.**

In this modern, negative-pressure or draw-through system, the fan is located on the opposite side of the collector from the material conveying line. Material does not pass through the fan. Mechanical friction and exterior dusting are eliminated. The unit is self-cleaning. It can cool, heat, aerate, or dry. Materials can be routed anywhere you can run a pipe. There is a minimum of moving parts.

Thorough experience in application and design is essential to getting best results from any pneumatic system. Sprout-Waldron is one of the country's foremost designers and builders of pneumatic systems, and has been manufacturing Pneu-Vacs for more than 9 years. Be sure to compare Pneu-Vac with all others before installing any pneumatic conveying equipment. Write for details.

SPROUT-WALDRON

Manufacturing Engineers Since 1866

15 LOGAN STREET • MUNCY, PA.

Equipment for { SIZE REDUCTION, MIXING & BLENDING, PELLETING & CUBING, BULK MATERIALS HANDLING, PRODUCT CLASSIFICATION

Facilities for fabricating, machining, custom founding, woodworking, laboratory testing

PR/384

Heating & Cooling

Generators, Steam, cont.—Heaters, Unit

Generators, Steam.....Offers complete details on packaged water tube steam generators . . . furnished for oil or gas firing or both, with automatic, semi-automatic or manual combustion controls, in Bulletin MH-3-54.
256A Union Iron Wks.

Generators, Steam.....Economical and efficient, producing steam for process or heat. Fire-tube models (20-600 b.h.p.) in Catalog No. 622-F. Water-tube models (200-1000 b.h.p.) in Catalog No. 622-W.
256B Superior Combustion Ind.

Generators, Steam.....Compact, completely factory assembled & Factory Fire Tested "Keystones" fit into any plant's variable steam needs. Covers fully automatically controlled Keystone in Bulletin No. SB-51.
119 *Erie City Iron Wks.

Heat Exchanger Sections.....Available with mild steel, stainless, alloy and non-ferrous fintubes . . . in standard sizes . . . for a wide range of capacities and pressures. Information in Bulletin No. 512.
256C Brown Fintube Co.

Heat Exchangers.....Experience in designing custom-built heat exchangers for all sorts of chemical and petroleum applications . . . helps to solve specific problems. Complete information on heat exchanger design.
256D Trane Co.

Heat Exchangers . . . . . For corrosive or non-corrosive liquids and gases. Industrial builds these to suit the job and can furnish all auxiliary pumps, piping and fittings. Request Bulletin 600-2-354.
287f *Industrial Filter & Pump.

Heat Exchangers.....Pictures and describes company's line of heat exchangers of the shell and tube type . . . for the petroleum and chemical processing industries. Request 8 p. illustrated Bulletin No. HT-40.
256E National Radiator Co.

Heat Exchangers . . . . . Open in 5 seconds with new p-k Lever-Lock Door —substantial savings seen for processors of high-fouling liquids & others who must clean & inspect heat exchangers regularly. Request Bulletin 2030.
6 *Patterson-Kelley Co.

Heat Exchangers.....Details on brazed aluminum heat exchangers for difficult heat transfer applications requiring close temperature approaches, multi-stream exchange, or low temperatures. Illustrated.
256F Downingtown Iron Wks.

Heat Exchangers . . . . . "Flexible standard" alloy designs provide custom-built features at a competitive standard price. Standard glassed steel designs available for highly corrosive services. Complete data.
141a *Pfaudler Co.

Heat Exchangers.....Presents a fully illustrated 12 p. reference describing company's line of Impervite impervious graphite equipment . . . for high efficiency chemical heat transfer. Request Catalog HE 642.
256G Falls Industries.

Heat Exchangers . . . . . Impervite cubical units provide greatest ratio of heat transfer surface to overall size . . . accomodate pressures to 100 psi, tranfer surface to 100 sq. ft. etc. Descriptive Catalog.
295f *Falls Industries.

Heat Exchangers.....Offers complete descriptive material on the company line of Delanium graphite cubic heat exchangers. Valuable features: cubic design saves space; resist corrosion; reduce maintenance; etc.
256H Delanium Carbon Corp.

Heat Exchangers.....Particularly adapted to the handling of vegetable oils, fats, waxes, pastes, creams, etc. Obtain maximum production, maximum heat transfer, a better, more uniform product. Bulletin HE-100.
256I Davis Engrg. Corp.

Heat Exchangers.....In De Laval plate heat exchangers the plates are so designed as to produce strong turbulence and high velocity . . . achieving maximum heat transfer. Request Heat Exchanger Bulletin.
256J De Laval Separator Co.

Heat Exchangers.....Cool liquids & gases by evaporative cooling with atmospheric air, removing the heat at the rate of input, controlling temperature precisely. Details in illustrated Bulletin No. 120.
273j *Niagara Blower Co.

Heat Exchangers.....Company issues 24 p. descriptive Booklet on their Heat Exchanger Division. Covers the operations required in manufacture of equipment, with complete illustrations and photographs.
256K Lummus Co.

Heat Exchangers.....Nukem Hi-Temp heat exchangers are designed to provide superior service in heat transfer for practically all commercial acid, salt and alkaline solutions. Includes features and prices.
256L Nukem Products Corp.

Heat Exchangers.....Illustrated, 12 p. describes precision fabricated heat exchangers for any process industries application—involving gas to gas, liquid to liquid, liquid to gas, powdered solid to solid, etc.
256M M. W. Kellogg Co.

Heat Exchangers.....Compact, highly efficient and rugged source of high pressure hot air or gas. Pressures to 300 psig, temperatures to 1200°F. Applications, operation, construction, etc. in Bulletin 105.
256N Thermal Research & Engrg.

Heat Exchangers.....Your heat exchanger problems will be handled completely and efficiently . . . with National's line of shell and tube heat exchangers. Supplies complete information in Bulletin No. HT-654.
256O National Radiator Co.

Heat Exchangers.....Describes how equipment offers: chemical resistance to practically all corrosive fluids; resistance to severe thermal shock; high heat-transfer rates; low maintenance; etc. Catalog S-6740.
256P National Carbon Co.

Heat Exchangers.....Covers complete line of Karbate brand impervious graphite shell & tube heat exchangers. Engineered for maximum corrosion resistance & minimum maintenance. Request Catalog Section S-6800.
256Q Natonal Carbon Co.

Heat Exchangers.....New standardized heat exchanger design features lower first cost, more area per unit, choice of tube lengths, faster delivery, etc. Company offers full information in Catalog S-6840.
256R National Carbon Co.

Heat Exchangers.....Illustrated, 12 p. describes the "Holo-Flite" Processor —a proven heat exchanger for cooling, heating, cooking & drying. Covers many features, construction & operation, applications, etc.
256S Western Precipitation Corp.

Heat Exchangers.....Describes how heat exchanger applies to controlled temperature cooling of water, oil & other liquids & gases in wide variety of industries, with great cooling water savings. Bulletin No. 124.
273k *Niagara Blower Co.

Heat Exchangers.....Illustrated, 16 p. includes sections on: company's history; engineering department; fabrication facilities; economics of design of heat exchangers; quality control, testing, research.
256T Western Supply Co.

Heat Exchangers.....“WU” heat exchanger is an extremely versatile, instantaneous water heating unit, with a wide range of applications. Covers features, materials of construction, ratings, etc. Bulletin GC-1054.
256U Bell & Gossett Co.

Heat Exchangers.....Specially designed stainless steel heat exchangers for heating or cooling liquids & gases as used in chemical & other industries where elements of corrosion to alloys are encountered. Catalog 1155.
339b *Young Radiator Co.

Heat Exchangers, Immersion.....Impervite plate & bayonet-type heat exchangers are impregnated, machined & fabricated all under one roof to assure maximum operating efficiency & long service life. Bulletin 753.
256V Falls Industries.

Heat Transfer Apparatus.....“SK Heat Transfer Apparatus” furnishes valuable information on the various types of tube bundles. Special materials, sizes, types & modifications are all covered. Request Bulletin HT-1.
256W Schutte & Koerting Co.

Heat Transfer Apparatus.....Describes Twin G-Fin Section as the universal heat transfer apparatus—operating with success as cooler, heater, condenser & heat exchanger for a wide range of fluids. Bulletin 1400.
256X Griscom-Russell Co.

Heat Transfer Apparatus.....Votator heat transfer apparatus can improve efficiency and product quality in numerous processes. Company makes available a Heat Transfer Data Book containing complete information.
256Y Girdler Co.

Heat Transfer & Crystallization.....Offers descriptive literature—a 52 p. book giving practical presentation of the fundamentals of modern evaporation & crystallization methods & equipment. Bulletin No. E-106.
256Z Swenson Evaporator Co.

Heat Transfer Equipment.....Provides heat transfer equipment for the most exacting services in petroleum refineries, chemical plants, and related industries. Bulletin describes the wide range of equipment.
256AA Henry Vogt Mach. Co.

Heaters.....Announces release of 20 p. illustrated catalog describing all models of fuel oil heaters, with detailed information as to dimensons and capacities. Includes valuable selection data. Bulletin 743.
256BB Manning & Lewis Engrg. Co.

Heaters.....Handy guide for selecting heating equipment & control. Shows which type of heater to use for specific jobs, how to determine heater rating, how to calculate heat-up time, etc. Bulletin GEA-6146.
256CC General Elec. Co.

Heaters, Air, Direct Fired.....Readily adaptable to wide variety of uses in ovens, kilns, dryers, etc. Includes information on applications, operation and typical sizes, in fully illustrated Bulletin No. 104.
256DD Thermal Research & Engrg.

Heaters, Dielectric.....New reference describes operating advantages. Tells how heaters can help cut costs in heating, drying, baking or curing of nonconduction materials. Request illustrated Bulletin No. 15B6431B.
256EE Allis-Chalmers Mfg. Co.

Heaters, Electric.....Specially built internal heaters used in air dryers to provide accurately controlled heat essential to top performance. Many other electric heaters, applications, etc. in Catalog CE-54.
256FF Heatube Corp.

Heaters, Electric.....New electric heaters make use of copper-sheathed, mineral insulated, resistance cable. Presents background, application & performance characteristics, in fully illustrated Bulletin 1603.
256GG Nelson Elec. Mfg. Co.

*From advt., this issue

Heaters, Gradiation.....Selas Gradiation Zone Control offers new possibilities in every chemical plant where heat processing is a precise operation. Provides complete information in a new 16 p. Booklet.
257A Selas Corp. of America.

Heaters, Immersion.....Electric immersion heaters & controls for every application . . . acid heating—alkali heating. Covers advantages, construction, uses, installation, prices & ratings, etc. Bulletin No. 25.
257B Pyrosil, Inc.

Heaters, Immersion.....Releases valuable 24 p. reference, "Kemp Case Histories," which features installations of Kemp industrial gas equipment at seventeen major companies. Illustrated Bulletin No. G-10.
257C C. M. Kemp. Mfg. Co.

Heaters, Infrared.....Data on new radiant heaters which provide more than 100 watts per sq. inch of lamp surface. Covers outstanding features, installation, applications, etc. in fully illustrated Bulletin.
257D N. J. Thermex Co.

Heaters, Jet.....Valuable information on SK low pressure, high capacity jet heaters . . . designed to provide large quantities of hot liquid (usually water) for delivery to tank or reservoir. Bulletin 3A-HC.
257E Schutte & Koerting Co.

Heaters, Pipe Line.....Continuous pipe line water heater provides efficient dependable heating in a wide variety of industrial applications. Capacities, sizes, applications, etc. 20 p. illustrated Bulletin 3-A.
257F Schutte & Koerting Co.

Heaters, Radiant.....Describes multiple uses & added efficiency of Clepco Quartz Radiant Heaters. Illustrates the various shapes & sizes and the application to your baking & drying jobs. Request Bulletin No. 100.
257G Cleveland Process Co.

Heaters, Storage.....47 p. fully illustrated reference covers valuable data on hot water storage heaters—capacities & weights, dimensions, conversion tables, construction details, etc. Catalog No. 18.
257H Patterson-Kelly Co.

Heaters, Tank.....Transfer more heat, faster & at lower temperatures, avoiding coking or damage to heat sensitive materials. Easily installed in existing or new tanks. Dimensions & details in Bulletin 541.
257I Brown Fintube Co.

Heaters, Thermal Liquid.....Perfected thermal liquid heaters provide temperatures to 750°F for the process industries. Specific features of International-Lamont heaters included in descriptive Bulletin.
257J International Boiler Wks. Co.

Heaters, Unit.....Describes new series of horizontal unit heaters...designed to provide comfortable outlet temperatures on high pressure, high temperature steam systems. Complete details in Bulletin 700-A5.
257K American Air Filter Co.

Heaters, Unit.....For steam or hot water applications. Offers a 48 p. illustrated Bulletin which includes the features of design, general engineering data, capacity tables, piping diagrams, etc. No. 7517.
257L American Blower Corp.

Heaters, Unit.....Describes line of high capacity blower-type unit heaters. Roughing-in dimensions, capacity tables & piping details provide handy reference for unit selection. Data in Bulletin No. DS-327A.
257M Trane Co.

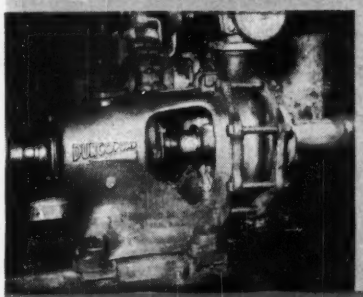
Heaters, Unit.....Presents descriptive literature on Grid unit heaters. Offer all cast iron construction that stands up well against corrosive acid fumes of HCl, Cl_2, etc. Full details in Catalog No. BC-1049.
257N D. J. Murray Mfg. Co.

$793.50 Saved on Three Acid Pumps!

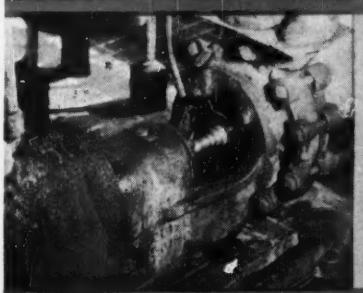
$793.50* has been saved, to date, on these three tough pumping jobs by reduced stuffing box maintenance. These pumps have given continuous, trouble-free service after

CHEMPRO Mechanical Seals†

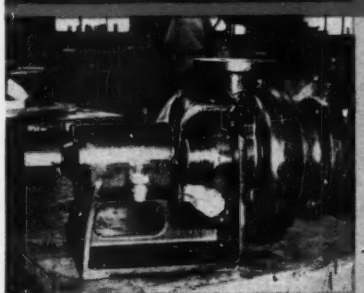
were installed. In pump after pump, the Chempro seal has paid for itself in the first few months of service.



1 Durichlor Model X3RG-100 Durcopump, handling 30% HCl in a dyestuff plant. This large 2¼" Chempro Style WLC seal has operated for more than eight months without leakage.



2 LaBour No. 20 Type DLP pump unloading tank cars of oleum and 96% H_2SO_4 in a chemical plant. Before installing a Chempro Style WLZ seal, this pump was repacked weekly. The Chempro seal has given more than 11 months of trouble-free service.



3 Worthington 4CNG-84 pump operating on 94% H_2SO_4 in an oil refinery. A No. 175 Chempro Style WLZ seal solved the packing problem after it was installed more than seven months ago and is giving 100% leak-free service.

*Based on users figures. †Patented

Write for new Chempro Seal Bulletin CP551

CHEMICAL & POWER PRODUCTS, INC.
The Original Fabricators of Teflon Packings and Gaskets
5 Broadway, New York 4, N. Y.

Heating & Cooling

Heating & Air Conditioning—Tubes, Condenser & Heat Exchanger

Heating & Air Conditioning.....Manufacturing engineers of heating, air conditioning, ventilating and heat transfer equipment...announce the availability of their illustrated Product Bulletin No. PB-290.
258A Trane Co.

Heating Elements, Electrical.....Flexible electrical heating elements for general industrial use. Perform continuously at 450°F.; operate under high pneumatic pressure; light weight —tough; etc. Illustrated, 4 p.
258B Electro-Flex Heat.

Heating Elements, Electrical.....Releases a fact-filled Catalog on Heatflex electrical heating elements containing descriptive material, applications, specifications & engineering information. 8 p.
258C Continental Elec. Equipment.

Heating Equipment . . . . . Subcomco Application Manual explains general nature of Submerged Combustion, shows many applications & compares installation & operating costs with conventional equipment.
293 *Submerged Combustion Co.

Heating, Steam, High Pressure . . . . . Describes method completely utilizing both the sensible & latent heat of high pressure steam. Trustworthy, long lived equipment for heating or process. Bulletin No. 109.
273b *Niagara Blower Co.

Heating Systems, Dowtherm.....Furnishes descriptive information on Dowtherm heating systems for processes requiring precision control of high constant temperatures at low pressures, in Bulletin ID-54-5.
19f *Foster Wheeler Corp.

Heating Systems, Steam.....Offers data on five major types of steam heating systems, with and without control, and a full line of valves, traps and steam power specialties. Details in 20 p. illustrated Bulletin 110.
258D American Air Filter Co.

Heating Units, Electric.....Makes available an illustrated 23 p. Booklet covering complete information on heaters, thermostats & snap switches for the users of industrial electrical units. No. B-6161.
258E Westinghouse Elec. Corp.

Heating Units, Electric.....Literature describes methods of electrically heating liquids, air, gases, machine parts, process equipment. Illustrated 32 p. booklet, "101 Ways to Apply Electric Heat," No. F1550.
258F Edwin L. Wiegand Co.

Heating-Ventilating Units.....Capacities range from 1,200 cfm to 15,000 cfm—can provide heating, ventilation, filtering, humidifying, or any combination of these functions. Bulletin offers complete information.
258G American Air Filter Co.

Humidity Conditioning.....Presents valuable information concerning Kathabar humidity conditioning . . . which has solved industrial air conditioning problems for twenty years. Request Literature Group K54-2.
258H Surface Combustion Corp.

Humidity Conditioning.....Stops moisture regain in ammonium nitrate using 87°F coolant to get 46°F dewpoint. Economical, rugged & safe Kathabar units are fully described in Literature Group No. K54-3.
47 *Surface Combustion Corp.

Humidity Conditioning.....Presents methods for eliminating condensation & resultant equipment corrosion in filtration plant pipe galleries & wash water pump rooms, in a 4 p. illustrated bulletin, Form K-354.
258I Surface Combustion Corp.

Pipe Coils.....Company makes available a completely illustrated reference describing their square-finned pipe coils. Includes information on features & advantages, specifications, dimensions, etc. Bulletin 158.
258J Frick Co.

Platecoils.....Designed for tank heating and cooling problems due to inefficient pipe coils. These cost-saving platecoils heat or cool 50% faster and take 50% less space in the tank. Offers Bulletin No. P61.
258K Tranter Mfg.

Preheaters, Air.....Ljungstrom air preheater makes fuel burn more completely—at a higher temperature—greatly reducing the rate of slag build-up on furnace tubes. Company furnishes full product information.
258L Air Preheater Corp.

Scoops, Syphon.....Company announces the release of literature which explains the fundamental principles of the new Armstrong "Syphon Scoop" for draining cylinder dryers. Illustrated, 4 p. Bulletin 266.
258M Armstrong Mach. Wks.

Shell-Ice Makers.....Shell-ice can be made in pieces as small as desired. Ice is hard & solid, giving greatest refrigerating effect in use. Covers operating principle, construction, advantages, etc. Bulletin No. 54.
258N Frick Co.

Thermo-Panels.....Cost less and perform better—an improvement on pipe coils. You save space & heat or cool more efficiently. For use in heating & cooling of liquids, slurries, soaps, waxes, etc. Offers Bulletin.
258O Thermo-Panel Div.

Towers, Cooling.....Open gravity distribution is one of the exclusive design features of company's line of crossflow cooling towers. Advantages are thoroughly explained in 32 p. Bulletin No. CF-54.
258P Marley Co.

Towers, Cooling.....Illustrated, 36 p. provides a description of induced-draft cooling tower construction. Covers advantages of "Counterflo" design, methods of water distribution, etc. Bulletin CT-ID-0.002.
258Q Fluor Corp.

Towers, Cooling.....''Engineering Manual for Industrial Cooling Towers" offers basic & complete data on industrial cooling towers of all types. Covers construction, methods of operation, performance data, etc.
258R Marley Co.

Towers, Cooling.....Contains great deal of new material on air-conditioning cooling tower applications, specifications, selection and installation. Includes data on operating characteristics. Catalog WT & CT-583.
258S Halstead & Mitchell.

Towers, Cooling.....''Studies Relative to Protection of Cooling Tower Lumber" covers results of program conducted with govt'l. laboratory to learn more of causative factors & methods of controlling decay.
258T Marley Co.

Towers, Cooling.....34 p. profusely illustrated reference furnishes valuable information relating to line of induced draft cooling towers for industrial and air conditioning applications. Request Bulletin No. 4.9.080.
258U J. F. Pritchard & Co.

Towers, Cooling.....New 20 p. booklet, "Test Your Tower," describes simple direct method by which purchaser of industrial cooling tower can assure himself that he will receive performance exactly as specified.
258V Marley Co.

Towers, Cooling.....New catalog illustrates and explains in clear detail the construction and operation of Acme towers in the capacity range of 15 through 100 tons. Covers outstanding features. Catalog No. 700.
258W Acme Industries.

Towers, Cooling.....Describes LoLine cooling towers . . . specifically designed for air conditioning applications—with the lowest silhouette of any tower of 75 ton capacity or larger. Bulletin No. 5.1.902.
258X J. F. Pritchard & Co.

Towers, Cooling.....''Packaged Cooling Tower Know How" includes flow charts, wiring diagrams, pump selection, etc. It deals with both mechanical & natural draft cooling towers & method of selection of both types.
258Y Marley Co.

Towers, Cooling.....Reflect over 50 years of experience in meeting specific needs of all types of power & process plants. Engineered & constructed to give maximum performance at minimum cost. Catalog No. CT-52-4.
258Z Foster Wheeler Corp.

Traps, Ball Float.....Describes ball float traps for draining water from air, gas or steam lines or for draining light liquids from gas under pressure. Physical & selection data, prices, etc. Bulletin No. 289.
258AA Armstrong Mach. Wks.

Traps, Moisture, Float-Type.....Now available to fill need for a simplified, low-cost, float trap on air, gas, and steam applications. Offers details on well-designed and compact units in Drawing No. S-1555.
258BB V. D. Anderson Co.

Traps, Steam.....Company makes available a descriptive 44 p. Steam Trap Book which furnishes complete trap data and prices plus useful selection, installation and maintenance information. Request Catalog "J."
258CC Armstrong Mach. Wks.

Traps, Steam.....Lists numerous features of Thermodynamic steam traps such as: only one moving part; practically no maintenance; no changing of heads or seats; close tight on no load; etc. Illustrated Bulletin 255-A.
258DD Sarco Co.

Traps, Steam.....Larger valve orifice saves four ways: initial cost; upkeep expense; warm-up time; production time. Six types for every process, heat, power use. Complete information in Trap Catalog 953.
258EE W. H. Nicholson & Co.

Traps, Steam & Air.....Detailed information on steam and air traps—high capacity traps designed to handle pressures to 600 psig. Feature design simplicity and lowest maintenance and repair record. Bulletin 5415.
258FF C. E. Squires Co.

Traps, Steam, Impulse.....Serve all normal trapping requirements. Feature many advantages: small size; quick heating; steady temperatures; one moving part; stainless steel construction; etc. Bulletin T-1740.
258GG Yarnall-Waring Co.

Tubes, Condenser.....Includes information on copper alloys, condenser tube corrosion, photomicrographs of grain structure of different metals under varying operating conditions, etc., in detailed, 28 p. booklet.
258HH Revere Copper & Brass.

Tubes, Condenser.....If stress corrosion cracking is costing you money and loss of production—ask Bridgeport Technical Service to analyze the factors involved. Makes available 165 p. Condenser Tube Handbook.
258II Bridgeport Brass Co.

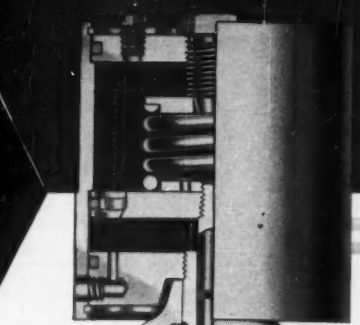
Tubes, Condenser.....Trufin is available in copper (and its alloys), aluminum, electric-welded steel, and bi-metal. Pertinent information and case histories in the company's "Opportunity" publication.
258JJ Wolverine Tube Div.

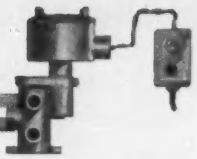
Tubes, Condenser & Heat Exchanger.....Steel and Tubes Division has published literature describing line of carbon steel tubing for heat exchangers and condensers. Illustrated 12 p. Brochure No. HEC-1.
258KK Republic Steel Corp.

*From advt., this issue

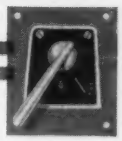
For Remote Shut-off Applications...

ANNIN CYLINDER VALVES





ELECTRO-PNEUMATIC SOLENOID PILOT ACTUATED



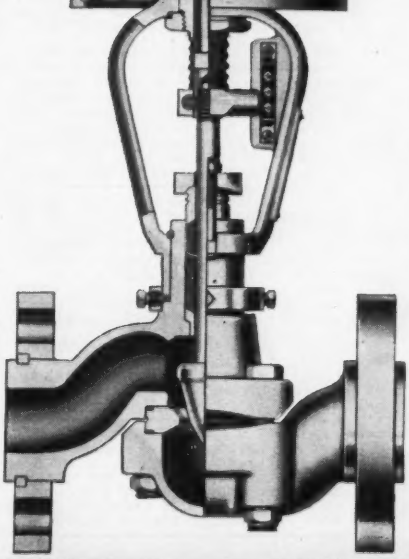
3-WAY OR 4-WAY MANUAL AIR ACTUATED

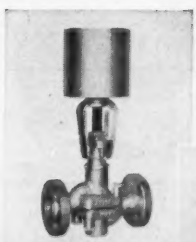
PNEUMATIC CONTROLLER ACTUATED

provide the complete answer!

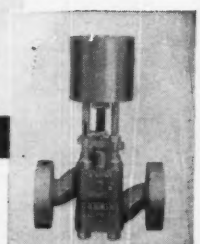
...with these advantages:

- Positive shut-off
- Fast action
- Spring to open
  or
- Spring to close
- Globe, angle & 3-way bodies
- Carbon steel and all cast and forged alloys available
- Metal seats for high temperatures





MODEL 4520



MODEL 6520

and absolute shut-off dependability and safety with **ANNICO TEFSEAL SEATS** proven in dangerous services, such as Liquid Oxygen, Fuming Nitric Acid, Liquid Nitrogen and CO_2, Fuels and other FLUIDS at all pressures and temperatures —300° to +450° F

ANNIN *Control* VALVES

THE ANNIN COMPANY
6570 EAST TELEGRAPH ROAD, LOS ANGELES 22, CALIFORNIA

Heating & Cooling

Tubes, Heat Exchanger—Vaporizers, Dowtherm

Tubes, Heat Exchanger.....Chase Antimonial Admiralty heat exchanger tubes contain right amount of antimony needed to resist dezincification & other forms of corrosion. Condenser & Heat Exchanger Tube Booklet.
260A Chase Brass & Copper Co.

Tubes, Heat Exchanger.....Tubing is made from flat-rolled steel that's inspected on both sides before the tubing is formed. Free from scale, scabs and slivers. Complete information in Booklet CEC-54.
260B Republic Steel Corp.

Tubes, Heat Exchanger, Aluminum..... Company's booklet brings you all the facts about the latest developments in aluminum heat exchanger tubes. Profusely illustrated with photographs, charts, and graphs.
260C Aluminum Co. of America.

Vaporizers, Dowtherm.....Firetube Dowtherm vaporizers & heaters provide safer, more dependable heating & low maintenance. Includes diagrams of nine basic Dowtherm systems in detailed, 28 p. Bulletin A-100.
260D Eclipse Fuel Engrg. Co.

Instruments & Controls

Actuators, Valve.....Covers tandem type actuators for valves requiring relatively high torques to operate, and new floating bar type actuators for use on valves requiring lower operating torques. Bulletin 3020.
260E Ledeen Mfg. Co.

Amplifiers, DC.....A key instrument in new PowrAmp line of electro-pneumatic & electro-hydraulic measurement & control components with unusual sensitivity & accuracy. Full story in Bulletin MSP-111.1.
260F Hagan Corp.

Amplifiers, D-C Indicating.....Describes new design approach, exceedingly stable performance and unique principle of operation. Also includes a photographic illustration along with typical applications. Bulletin 1A.
260G Doelcam Corp.

Amplifiers, Magnetic.....Technical aspects of Magamp magnetic amplifiers for control applications covered in 20 p. booklet. Includes basic theory underlying magnetic amplifier operation. Technical Data 52-600.
260H Westinghouse Elec. Corp.

Analysis of Light Hydrocarbons.....The Fracton is the product of a new approach in the development of a faster and simpler method of analysis of light hydrocarbon gases. Complete information in Booklet No. 82.
260I Burrell Corp.

Analyzer-Recorders, Oxygen-Combustibles.....Provide a continuous two-in-one check of combustion efficiency by recording both oxygen & combustibles in flue gas. Product Specifications Nos. E65-1 & E12-5.
260J Bailey Meter Co.

Analyzers.....Tri-Non & Bichromator analyzers continuously record concentration of any desired stream component. Each is sensitized & adjusted to specific plant conditions before shipping. Full details.
260K Perkin-Elmer Corp.

Analyzers, Gas.....Valuable information on gas analyzers for thermal conductivity measurements. Describes features, principle of operation, physical specifications, special applications, etc. Illustrated.
260L Charles Engelhard.

Analyzers, Gas.....Infrared gas analyzers designed for plant analyses of gas compounds in multi-component streams. Feature no moving parts—no lenses—no mirrors. Information in Demonstrator ND46-91(1).
260M Leeds & Northrup Co.

Analyzers, Gas.....Electro-conductivity gas analyzers by Davis with instrumentation by Honeywell described & illustrated. Includes pertinent data on theory, operation, applications, in Data Sheet No. 10.15-12.
260N Minneapolis-Honeywell.

Analyzers, Gas.....New supersensitive gas detector makes possible accurate detection of toxic or combustible gases in extremely low concentrations. Covers operation, specifications, models, etc. In Bulletin 501.
260O Taller & Cooper.

Analyzers, Gas, Combustible.....Covers complete line of combustible gas analyzers and alarms. Contains details of how these instruments work and describes the components. Fully illustrated 20 p. Brochure No. 0703-3.
260P Mine Safety Appliance Co.

Analyzers, Infrared.....Complete details on infrared analyzer (Type 38-101). Handles up to five streams at a rate of five analyses per hour per stream, i.e., 12-minute cycle period. Request Bulletin No. CEC 1840-X1.
260Q Consolidated Engrg. Corp.

Analyzers, Oxygen..... New savings in your operations . . . with Arnold O. Beckman oxygen analyzers. Helpful literature describes unique operating principle, advantages, applications, etc. Data File 15X-105.
305 *Arnold O. Beckman.

Analyzers, Oxygen.....Presents valuable information concerning the continuous specific oxygen analyzer...designed for low range measurement of oxygen in gaseous streams. Find complete data in Bulletin 11-40.
260R Davis Emergency Equipment.

Analyzers & Recorders.....The paramagnetic method of measurement is extremely accurate in analyzing industrial gases. Complete information on Magno-Therm O_2 Analyzer & Recorder in Bulletin 52-829-56.
260S Hays Corp.

Annunciators.....Literature available concerning all modern forms of lamp annunciators, including back-lighted message plates, sealed & non-sealed relays, standard & custom designs. Catalog Bulletin 854.
260T H. R. Kirkland Co.

Automation.....Covers company's philosophy of combining applied engineering, creative thinking, & electric motor drives to provide the "know-how" for automation of single machines or continuous processes. 12 p.
260U Reliance Elec. & Engrg. Co.

Cabinets, Test.....Hudson Bay environmental test cabinets for Jan & MIL tests, product evaluation & research activities shown in Instrumentation Data Sheet. Covers all aspects of versatile line. No. 11.0-8.
260V Minneapolis-Honeywell.

Cable.....With material specially designed for pneumatic connecting lines you can make better instrument and control installations in less time and at less cost. Bulletin offers complete information.
260W Bailey Meter Co.

Cameras, Television.....Pertinent information on versatile, closed-circuit television camera that includes many unique features to insure uniform picture quality & operating stability. Illustrated Bulletin 1175.
260X Diamond Power Specialty.

Cells, Conductivity.....Industrial Instruments manufactures a complete line of conductivity cells with models for every application. Covers conductivity measuring and control equipment in Catalog No. 20.
260Y Industrial Instruments.

Colorimeters.....Explains theory & use of new additive-colorimeter designed to serve as permanent "color memory" for control chemists in paint, food, textile, paper, plastics, etc. industries. 8 p. Bulletin FS-246.
260Z Fisher Scientific Co.

Comparators.....Announces a new portable comparator for calibrating extensometers, compressometers, dial gages, etc. Feature small size & elimination of mechanical linkages as a source of error. Bulletin 4210.
260AA Baldwin-Lima-Hamilton Corp.

Comparators.....Fully illustrated, 100 p. tells how to use pH and chlorine control for water supplies, process solutions, production processes in 34 basic industries. Also covers complete line of comparators.
260BB W. A. Taylor & Co.

Control, Automatic, Variable Speeds..... Varitrol is a new control device which regulates the speed of Varidrive in response to a signal. Request Bulletin on Varidrives with Varitrol automatic control.
260CC U. S. Elecl. Motors.

Control, Coordinated.....Coordinated control helps reduce cost of high pressure ammonia plant. Fully illustrated Composite Catalog No. 5002 provides a condensed description of complete Honeywell product line.
260DD Minneapolis-Honeywell.

Control, Dew Point.....In successful use in nuclear fission, pharmaceutical, food and chemical plants, distilleries, photo film production, drying and storage operations. For full data request Bulletin No. 407.
260EE Foxboro Co.

Control Drives.....Small, piston-operated Bailey control drive will improve flow characteristics of butterfly valves, dampers, hydraulic couplings, feeders & similar regulating devices. Request Spec. CA040.
260FF Bailey Meter Co.

Control Equipment, Steam & Liquid..... Illustrated, 56 p. covers pertinent data on pressure regulators, temperature regulators, combination pressure and temperature regulators, float valves, etc. Catalog No. 54.
260GG O. C. Keckley Co.

Control, pH.....Offers suggestions on measurement & control of pH of cooling tower water, & describes equipment for application. Process Data Sheet, "L&N pH Control of Cooling Tower Water," No. 700(1).
260HH Leeds & Northrup Co.

Control Pilots.....Pertinent information on liquid level, pressure & temperature pilots. Includes data on unique design, features, operation, applications, selecting, specifying & ordering, etc. Bulletin No. 5303.
260II Leslie Co.

Control Stations.....New Mini-Line control station provides complete picture of control system performance and full flexibility of remote control. For complete details refer to Product Specification P99-1.
260JJ Bailey Meter Co.

Control Systems.....Cabinetrol panels form a standard low-voltage control system that handles all motor types up to 600 hp from central location. Offers complete information in illustrated Bulletin GEA-3856.
260KK General Elec. Co.

Control Systems, Combustion.....Provide complete automatic starting and operating flame failure protection for commercial light oil, gas, and combination light oil/gas burners. Illustrated 16 p. Bulletin CF-30.
260LL Electronics Corp. of Amer.

Control Systems, Process.....All-encompassing advantages assure...highest reliability of instrument performance, minimum maintenance & utmost in flexibility. Find complete information in Catalog No. 164.
260MM Manning, Maxwell & Moore.

*From advt., this issue

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BULLETIN 559

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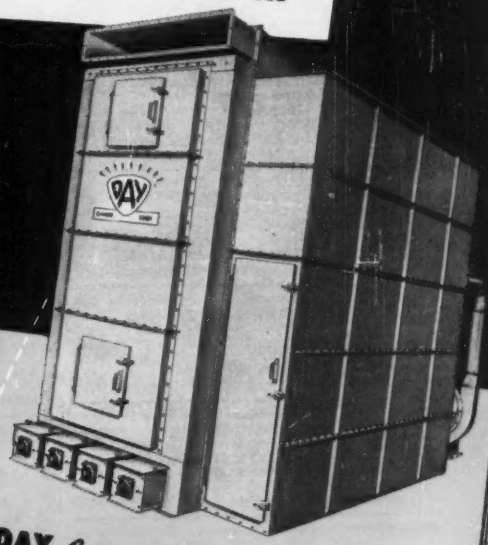

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Inquiry Code Number for this advertisement—261

Instruments & Controls

Control Systems, Reactor—Gages, Draft

Control Systems, Reactor.....Package reactor control in its various aspects is completely described in company's illustrated Brochure. Request your copy of "L&N Control Systems for Nuclear Reactors."
262A Leeds & Northrup Co.

Control Units.....Information on control used to treat water electrically for prevention of hard scale formation in all types of equipment which use or are cooled with water. Illustrated Bulletin No. 200R.
262B Aqua Elec. Scale Control.

Controllers.....Automatic recording pressure controllers for homogenizers & high pressure pumps. Offer advantages of increased processing efficiency, direct & immediate labor savings, etc. Bulletin RPC-54.
262C Manton-Gaulin Mfg. Co.

Controllers.....Taylor Fulscope controllers provide valuable features: unit construction — easy low-cost maintenance—simple adjustments—versatility — simple operation — etc. Details in Bulletin No. 98151.
262D Taylor Instrument Cos.

Controllers, Indicating.....Describes the Fenwal liquid-filled, snap-action Thermoswitch unit...one of the newest additions to the wide range of industrial temperature control & detection devices. Bulletin MC-120.
262E Fenwal, Inc.

Controllers, Indicating.....New, completely self-contained, direct deflection, indicating controller is adaptable to a multitude of process applications. Details in Bulletin F-6314 & Educational Bulletin No. 9.
262F Wheelco Instruments Div.

Controllers, Indicating.....Series 540 "On-off" indicating controller...is a rugged, durable & accurate remote indicating temperature control instrument designed for general industrial use. Illustrated Bulletin MC122.
122a *Fenwal, Inc.

Controllers, Indicating.....For control of simple processes—temperature, pressure, liquid level, humidity—investigate convenience and precise, reliable performance of M/41A controllers. Bulletin No. 5A-13.
262G Foxboro Co.

Controllers, Indicating.....Offers data on new Series 560 controller...with revolutionary thermistor principle of operation for kilns, ovens, furnaces, extruding, air heaters, etc. Features & specifications. Bulletin MC123.
122b *Fenwal, Inc.

Controllers, Limit.....Describes a new limit controller...providing economical insurance against human or instrument failures which may permit overshooting of critical temperatures. Bulletin No. F-6313.
262H Wheelco Instruments Div.

Controllers, Pneumatic.....Covers data on stack-type pneumatic controllers for process variables. Illustrated with cutaway construction photos, schematic diagrams and dimension drawings. 12 p. Catalog 53-10.
262I Fischer & Porter Co.

Controllers, Program.....Assure completely automatic process control of any time-temperature cycle with Off-on, Proportioning, High Limit or Stepless control action plus Secondary control action. Bulletin JG-1.
262J West Instrument Corp.

Controllers, Ratio.....Controllers regulate critical gas mixtures in carbon black production. Makes available detailed reference data—Catalog 2320, "Flow Meters, Indicating, Recording, Integrating and Controlling."
262K Minneapolis-Honeywell.

*From advt., this issue

Controllers, Recording.....Offer reduced maintenance through the "Magnetic Standard" in potentiometers and an improved bridge balancing unit in a-c bridge instruments. Covers full data in Bulletin GED-2100.
262L General Elec. Co.

Controllers, Recording.....Speedomax H two-position recording controller—a new concept in instrumentation. Complete details in pictorial fold-out which takes you inside the instrument. Die-Out ND46(1).
262M Leeds & Northrup Co.

Controllers, Speed.....Covers detailed information on a time delay speed controller designed to fit all makes of electric trucks. Illustrated Bulletin describes the method of operation of the unit. No. 1599.
262N Yale & Towne Mfg. Co.

Controllers, Time Cycle.....Versatile, automatic time-cycle instruments designed to provide a higher degree of flexibility, simplicity and ease of adjustment. Complete description in illustrated Bulletin 98154.
262O Taylor Instrument Cos.

Controls.....Sales and service centers offer fast, efficient and convenient service on finest in automatic controls for regulation of pressures, temperatures, liquid levels, flow. Climax Controls Catalog.
262P Black, Sivalls & Bryson.

Controls, Automatic Scales.....Technical Reference covers controls for automatic scales. Describes sequence of operations involved in weighing, indicating and recording processes. Fully illustrated. No. 53J.
262Q Richardson Scale Co.

Controls, Indicating.....Tells how mercury actuated indicating controls have been engineered with specific advantages for maximum efficiency in specific applications within —30°F to 1200°F range. Catalog CC.
262R Partlow Corp.

Controls, Level.....Equipment designed to provide link between capacitive-type electronic level-sensing equipment & corresponding actuation of pneumatic control valves described in leaflet. Form CP2.
262S Thermo Instruments Co.

Controls, Level.....Tektor level control indicates or controls level of fluids, powders, solids (conducting or non-conducting). Features low first cost . . . low operating cost. Request descriptive Bulletin.
262T Fielden Instrument Div.

Controls, Liquid Level.....Unaffected by surface agitation, equipment vibration, roll of a ship—a simple design offering steady, positive, precise control even under extreme conditions. Descriptive Data No. PC-37.
262U Leslie Co.

Controls, Liquid Level.....Magnetrol units are available for controlling level changes from .0025-in. to 150-ft. . . . with multi-stage switching when desired. Request company's complete literature.
225 *Magnetrol, Inc.

Ever use chemicals?

Of course you do — every chemical engineer does. So you'll want to take a hard look at our Inventory of New Chemicals & Materials in this issue. It's a handy rundown of major developments during the past twelve months. Nothinng ever like it before (p. 77).

Controls, Liquid Level.....Designed to give rugged, trouble-free service. High in sensitivity & accuracy—versatile in handling all kinds of liquids, with minimum service attention. Details in Bulletin No. F-3.
262V Fisher Governor Co.

Controls, Packaged Boiler.....Valuable information on the fully automatic, all electric metering type packaged control...for water tube type packaged boilers. Includes schematic diagram. Bulletin 53-1088-239.
262W Hays Corp.

Controls, Pressure-Drop.....Will perform with high-efficiency on your column . . . whether it's packed, bubble cap, or sieve-plate type . . . on continuous or batch runs. Details in Engineering Data Sheet 282-14.
262X Foxboro Co.

Controls Sizing.....BS&B's exclusive method takes both the "guess" and the "work" out of controls sizing for liquid, steam and gas applications. For complete information, request company's Manual.
262Y Black, Sivalls & Bryson.

Controls, Supervisory.....Describes accurate digital supervisory control expressly designed for remote measurement & such control functions as remote shaft positioning, on-off switching, etc. Bulletin ES-1.
262Z Bendix Aviation Corp.

Controls, Temperature.....Covers the Model D-1S...primarily used for controlling temperatures up to 1800°F., where a wide and easily adjustable range is required. Complete information contained in Bulletin 104.
262AA Burling Instrument Co.

Controls, Temperature.....Company line of controls offer dependable, cost-saving regulation of temperature or pressure...help improve operations. Makes available descriptive information on controls. Catalog PC-D.
262BB Fulton Sylphon Div.

Controls, Temperature.....A new and inexpensive non-bleed pneumatic temperature control is now available for operation of such devices as diaphragm valves, damper motors, etc. Full details in Bulletin 308.
262CC Powers Regulator Co.

Controls, Temperature.....Designed to control and indicate temperatures of gases, liquids or hot plates over wide ranges. Typical applications, outstanding features, engineering data, etc., in Bulletin No. 42.
262DD United Elec. Controls Co.

Controls, Temperature.....Illustrated Bulletin describes line of temperature controls. Covers Models VD-2S, VD-2C & VD-2X, & explains purpose, operation, tube construction, switch action, etc. Bulletin No. 105.
262EE Burling Instrument Co.

Controls, Thermal.....Help solve temperature control problems which involve heat, humidity, radiant heat, pressure and other variables. Detailed description of Thermoswitch units in illustrated Catalog No. 400.
262FF Fenwal, Inc.

Controls, Valve.....LimiTorque is the latest and most advanced valve control for operation of small valves. Includes description, application, features, ordering information, etc. Illustrated Catalogs L-54, SMA-000.
262GG Phila. Gear Wks.

Converters, Differential.....Complete information on company line in Bulletin No. 2291, "Differential Converter Liquid Level Transmitter," and Bulletin No. 1160, "Measuring and Controlling Liquid Level."
262HH Minneapolis-Honeywell.

Counters.....Complete line of electrically & mechanically actuated counters for indicating, recording & automatic regulation of industrial machinery described in illustrated Technical Reference No. 54C.
262II Richardson Scale Co.

Counters, Control.....20 p. Booklet contains detailed descriptions of equipment & techniques for controlling industrial equipment by means of predetermined electronic counters. Applications explained & illustrated.
263A Potter Instrument Co.

Counters, Flow.....Introduces the first commercially practicable, completely sealed automatic flow counter. This new unit accommodates up to twenty-five samples. For complete information request Bulletin No. 57.
263B Tracerlab, Inc.

Data Processing.....Applications of the NCR computer for electronic data processing, accounting & control. Describes 5 typical business & industrial problems & methods for solving them electronically. 12 p.
263C National Cash Register Co.

Detector Systems, Electro-Graphic..... Company announces the availability of a new, 8 p. fully illustrated Brochure which outlines a new approach to simplifying maintenance of complex electrical control systems.
263D W. F. & John Barnes Co.

Detectors, Leak.....New ultra-sensitive leak detector capable of detecting one part of helium in two-million parts of air. Most sensitive instrument for production line testing operations. Bulletin No.1801C.
263E Consolidated Engrg. Corp.

Detectors, Metal, Electronic.....Help to solve tramp metal problems. Sensitive to all metals...detect even minute particles & signal their presence... thus protecting processing equipment. Offers data in Bulletin B-1920-A.
263F Dings Electronics.

Diffractometers, X-Ray, compensated Beam..... Catalog describes the Hilger Compensated Beam X-Ray Diffractometer . . . for investigation of solid crystals by direct measurement of diffracted intensity.
55m *Jarrell-Ash Co.

Dynamometers.....Lists all company products (dynamometers, testers, mechanical pressure gages, etc.) together with illustrations & specifications of each model. Also wide variety of accessories. Bulletin 19-F.
263G W. C. Dillon & Co.

Electronics, Industrial..... Company's 1955 general catalog contains 308 p. listing over 25,000 items. Special emphasis has been placed on equipment for industrial maintenance, research and production requirements.
263H Allied Radio Corp.

Gages.....Profusely illustrated, 132 p. describes Ashcroft gages—indicating & recording—for pressure, vacuum or compound services. Also covers gage testers, mercury columns, "U" gages, etc. Request Catalog No. 300A.
263I Manning, Maxwell & Moore.

Gages.....For pressure, vacuum or compound service. There are no gears or teeth to wear out. Cam wiping action keeps contact points clean & smooth. Provides complete information in Gage Catalog No. G-2.
263J Helicoid Gage Div.

Gages, Beta.....For the continuous measurement of weight per unit area or thickness of sheet or strip without physical contact. Literature includes a complete description plus data on performance and operation.
263K Curtiss-Wright Corp.

Gages, Boiler Water....Pertinent information on high pressure boiler water gages with separated-design flat glass inserts. Offer superior quality and workmanship, and dependable service. Bulletin No. WG-1812.
263L Yarnall-Waring Co.

Gages, Draft.....Diaphragm operated Vertiscale gages feature completely new design in draft gages. Can also be employed for remote indication of pressure, flow, level, etc. Request Publication 52-1060-210.
263M Hays Corp.

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General Manufacturing

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Instruments & Controls

Gages, High Vacuum—Logger Systems, Multi-Point

Gages, High Vacuum . . . . . Outstanding among NRC's line of Thermocouple, Ionization, and Pirani Gages is Model 517 Alphatron. Ionization vacuum gage with a 10-4 to 1000 mm. Hg. range. Request Bulletin.
71e *Naresco Equipment Corp.

Gages, Liquid Level. . . . . Supplies a fully illustrated Catalog covering practically the complete company line of liquid level gages and valves with a condensed presentation of pertinent information. No. 236.
264A Jerguson Gage & Valve Co.

Gages, Liquid Level. . . . . Completely illustrated 76 p. reference describes the entire line of Penberthy liquid level and water gages . . . and also indicates their numerous points of superiority. Request Catalog 35.
264B Penberthy Injector Co.

Gages, Liquid Level. . . . . Presents valuable data on liquid level gages: reflex; thru vision; tubular. Standard equipment in leading refineries and industrial plants all over the world. Complete Catalog on request.
264C Strahman Valves.

Gages, Liquid Level. . . . . Covers 3 standard types of convex scale and flat scale Truscale remote reading gages, showing how gages bring liquid level down to where it can easily be seen. 8 p. illustrated Catalog 246.
264D Jerguson Gage & Valve Co.

Gages, Pressure & Temperature . . . . . Vibrotron electronic pressure & temperature gages . . . ideal for "watching" multiple processing operation and for "feeling the pulse" of pipelines. Request Bulletin.
131m *Byron Jackson Co.

Gages—Recorders—Testing Instruments . . . . . Illustrated, 68 p. includes data on line of indicating gages for refining, chemical & process industries, & for power plant & general industrial service. Catalog No. 500.
264E Crosby Steam Gage & Valve.

Gages, Tank. . . . . Company makes available pertinent information on their line of 100% automatic Liquidometer tank gages for gaging liquids of all kinds. Gages are approved by the Underwriters' Laboratories.
264F Liquidometer Corp.

*From advt., this issue

Gages, Thickness . . . . . Vidigage automatic thickness gage with 21" C-R Screen for instantaneous thickness measurements between 0.005" & 2.5" & accuracies of 0.1% to 1.0%. Details in Catalog No. V-101.
332c *Branson Instruments.

Gages, Tube. . . . . New tube gage provides a quick, simple way to accurately measure inside tube diameters prior to rolling small tubes in condensers and heat exchangers. Gage measures to .001". Data in Bulletin Y-39.
264G Elliott Co.

Gages, Vacuum. . . . . The Model 517 Alphatron vacuum gage provides accurate measurement over the widest range of any AC-operated vacuum gage. Presents Data Sheets covering complete line of gages and accessories.
264H Naresco Equipment Corp.

Gaging Equipment, Tank. . . . . Illustrated, 80 p. provides valuable information covering all types of gaging equipment, from top reading hand gages to the latest pulse code telemetering system. Bulletin No. CP-3007.
264I Vapor Recovery Systems Co.

Generators, Ultrasonic . . . . . For industrial processing & laboratory research. Offer valuable features: wide frequency range 10-1200 Kcs./sec.; continuous tuning; constant high power throughout frequency range; etc. 4 p.
264J Rich-Roth Labs.

Generators, Ultrasonic Power . . . . . For metal-washing and degreasing. R-F Powers 50 Watts to 25 KW. Stainless-steel-enclosed transducers with unlimited areas. For complete data, request Catalog No. S-11.
332b *Branson Instruments.

Governors, Zero Gas. . . . . Deliver gas in varying quantities but at consistent "zero" pressure without being affected by variations at governor inlet. Are available in six sizes. Contains full data in Bulletin M-400.
264K Eclipse Fuel Engrg. Co.

Indicator-Recorders. . . . . Covers compact, low-friction mechanical instruments for checking and recording the rate of feed of volumetric feeders by the loss-in-weight principle. Details in illustrated Bulletin 50-L13.
264L Omega Mach. Co.

Indicators, Bin Level. . . . . Bin-Dicator bin level indicator for all bulk materials. Signals change in level; automatically starts and stops filling and emptying equipment. Furnishes detailed Data Book.
334b *Bin-Dicator Co.

Indicators, Capacitive Level. . . . . Meter-indicating level monitor deriving its signal from an inert capacitive-type sensing probe fully described in new leaflet. Covers features & specifications. Form No. LI-2.
264M Thermo Instruments Co.

Indicators, Dew Point. . . . . Read dew points instantly . . . accurately. Dewpointer is completely self-contained, requires no external coolant or auxiliary apparatus. Operates on either a.c. or enclosed battery. Illustrated.
264N Illinois Testing Labs.

Indicators, Electrolytic Conductivity. . . . . Describes use for measuring the purity of condensate and various other solutions, sugar ash, and the conductivity of soil and soil extracts. Data Sheet E-95 (1).
264O Leeds & Northrup Co.

Indicators, Electronic Level. . . . . For accurate, continuous level measurement of liquids or divided solids. Feature savings in initial cost and in maintenance. Complete instrument information available.
264P Fielden Instrument Div.

Indicators, Gas. . . . . Offers the gas industry the M.S.A. Gascope—a simple and dependable instrument for the detection and "pin-pointing" of gas leaks in distribution systems. Data in illustrated Bulletin 0804-1.
264Q Mine Safety Appliances Co.

Indicators, Liquid Level. . . . . Describes remote liquid level indicators with new raised wide-vision face. Every part is precision-machined—every assembled instrument is precision-tested. Bulletin No. WG-1824.
264R Yarnall-Waring Co.

Indicators, Oxygen. . . . . Data on compact, accurate instruments designed to continuously measure the oxygen content of industrial atmospheres. Bulletin describes in detail the valuable features and applications.
264S Mine Safety Appliances Co.

Indicators, pH. . . . . Furnishes informative literature describing company's new panel-mounted indicator for continuous measurement of pH or redox in manufacturing processes. Illustrated Data Sheet ND 42-96(1).
264T Leeds & Northrup Co.

Indicators, Self-Balancing. . . . . Instruments for rapid reading, or logging, many temperatures quickly and accurately. Describes both types—potentiometer pyrometer and resistance thermometer. Bulletin 61.
264U Thermo Elec. Co.

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Indicators, Sight Glass.....Viso-Flo line offers a trustworthy visible means of alerting you as to rate of flow, viscosity, color of liquids, clarity & purity of product. Sizes, styles, details in Bulletin No. F-6.
265A OPW Corp.

Indicators, Temperature.....Describes 2 portable temperature indicators—Potentiometer Indicator & Resistance Thermometer—for heavy duty use. Includes operating adjustments, design features, etc. Bulletin A-303.
265B Foxboro Co.

Indicators, Temperature.....Details on a sensitive, rapid-responding temperature indicating instrument. Specification data on accuracy, battery life, response time, cable length, etc., in illustrated Form 196.
265C Beckman & Whitley.

Instrumentation for Absorbers.....Describes operation & instrumentation of Karbate standard falling-film type absorber — principle of operation, method of operation, applications, etc. Data Sheet No. 2.5-11.
265D Minneapolis-Honeywell.

Instrumentation, Process.....Presents a 12 p. general catalog with numerous illustrations, descriptions, and basic specifications of company's complete line of process instrumentation. Request Catalog No. 1.
265E Fischer & Porter Co.

Instrumentation, Rotary Kiln....Covers basic problems in measuring & controlling temperatures, pressure, burner fuel, speed & exhaust gas in rotary kiln operation. Request illustrated Data Sheet No. 1.1-2.
265F Minneapolis-Honeywell.

Instrumentation, Waste Treatment..... New methods of waste treatment aided by ElectroniK instrumentation. Details in Bulletin No. 7302, "Instrumentation for Water, Sewage & Industrial Waste Treatment."
265G Minneapolis-Honeywell.

Instruments.....Presents valuable 64 p. Catalog featuring a complete listing of the company line of instruments and accessories. Also included are brief descriptions of the most widely used analytical systems.
265H Coleman Instruments.

Instruments, Data Processing.....12 p. catalog furnishes information on the company's full line of data-processing equipment, ranging from miniature transducers to entire instrumentation systems. Bulletin CEC-1301.
265I Consolidated Engrg. Corp.

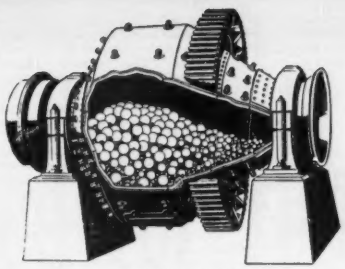
Instruments, Electronic Process Control .....Illustrated, 32 p. includes sections on: electronic communication in process control; major elements & design features; miniature recorder; etc. Bulletin No. 164.
265J Manning, Maxwell & Moore.

Instruments, Mechanical.....Covers full line of mechanical industrial instruments—fixed stem and distant reading dial thermometers, temperature and pressure recorders, etc.—in illustrated Catalog M-2-A.
265K Weston Elecl. Instrument.

Instruments, Metagraphic.....Measure, record, indicate & automatically control: pressure vacuum, absolute pressure; differential pressure, liquid level, flow, temperature & mechanical motion. Product Data Sheets.
265L Bristol Co.

Instruments, Ring Balance.....Presents reference containing detailed information on the application of Hagan ring balance instruments to problem of precise proportional chemical feeding. Bulletin No. MSA 102.
265M Hagan Corp.

Logger Systems, Multi-Point.....Designed around Brown ElectroniK strip chart recorder—measure & record temperatures or other variables from 144 different points in test cell, plant process, etc. Bulletin 1570.
265N Minneapolis-Honeywell.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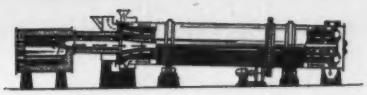
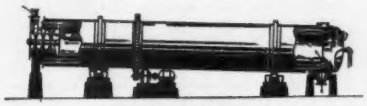
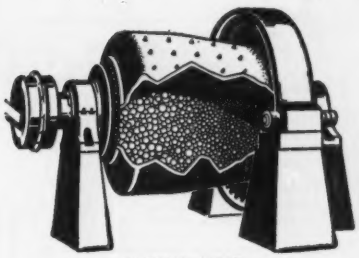
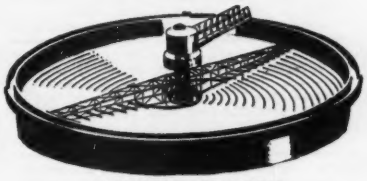
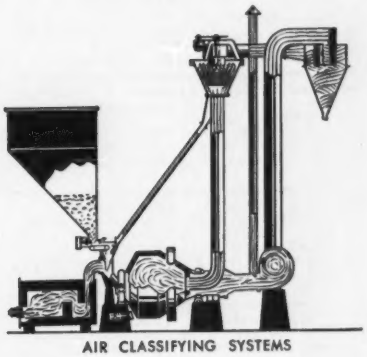
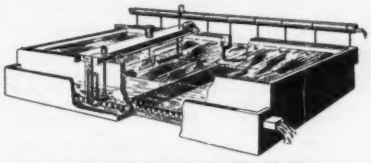

INDIRECT-FIRED ROTARY DRYERS AND HEATERS

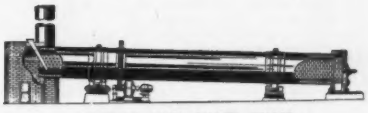

STEAM TUBED ROTARY DRYERS

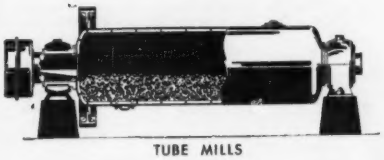

TRICONE MILLS

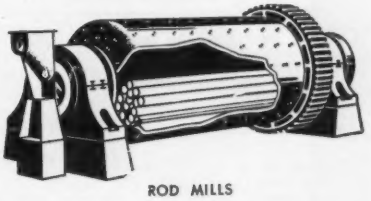

THICKENERS—CLARIFIERS

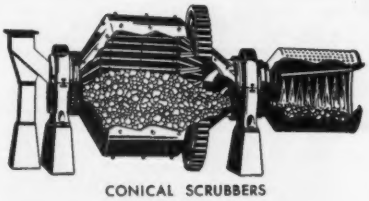

AIR CLASSIFYING SYSTEMS

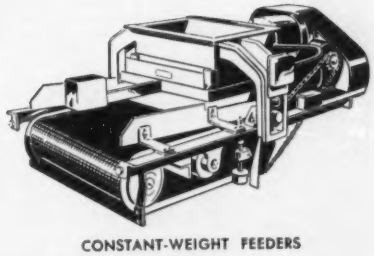

AUTOMATIC BACKWASH SAND FILTERS


ROTARY AND SHAFT KILNS


TUBE MILLS


ROD MILLS


CONICAL SCRUBBERS


CONSTANT-WEIGHT FEEDERS

ROTARY COOLERS

Write for general catalog 100-A-11 which describes the entire Hardinge line.

HARDINGE
COMPANY, INCORPORATED

YORK, PENNSYLVANIA • 240 Arch St. • Main Office and Works

New York • Toronto • Chicago • Hibbing • Houston • Salt Lake City • San Francisco

Instruments & Controls

Measurement, Dewpoint—Potentiometers

Measurement, Dewpoint . . . . . Describes dewpoint recorder including details about new multiple source type which automatically records dewpoints from 6 different sources in rapid succession. Data Sheet No. 10.5-1a.
266A Minneapolis-Honeywell.

Measurement, Oxygen.....Describes the application & operation of the A. O. Beckman Model F-3 oxygen analyzer & Brown ElectroniK recorder for measurement of oxygen in industrial processes. Data Sheet 10.5-11.
266B Minneapolis-Honeywell.

Measurement, Smoke Density.....Covers the MSA Smokescope . . . an optical instrument specifically designed for estimating density of smoke in stack effluent. Includes construction and operation. Bulletin No. 0811-3.
266C Mine Safety Appliances Co.

Measuring Systems, Pressure & Temperature.....Describes new ElectroSyn simplified system with electrical transmission for remote indication and control of pressure and temperature. Illustrated Bulletin 6351.
266D Control Engrg. Corp.

Measuring Systems, Temperature..... Foxboro Dynalog-Dynatherm combination insures better temperature measurement on any job between —100° and +600°F. Illustrated Bulletins describe numerous advantages.
266E Foxboro Co.

Measuring Systems, Torque.....Company furnishes descriptive Booklets with information on how you can benefit by using SR-4 Device systems to measure electronically either load, torque or fluid pressure.
266F Baldwin-Lima-Hamilton Corp.

Measuring Units, Light.....Illustrated bulletin provides technical details and specifications of the Colorede computing flicker photometer with Brown ElectroniK instrumentation. Data Sheet No. 10.10-5.
266G Minneapolis-Honeywell.

Metallographs.....Presents 6 p. illustrated Folder which contains a feature-by-feature description of the new Reichert Research Metallograph "MeF," permitting all known methods of microscopic investigations.
266H . . . . William J. Hacker & Co.

Meters.....Accurate and dependable . . . will safely handle over 856 different liquids in processing, blending, packaging and numerous other batching or blending operations. Presents descriptive information.
266I Bowser, Inc.

Meters.....Describes Conveyoflo meters —for continuous, accurate weighing of bulk materials passing over conveyor belts. Respond accurately to rapid load variations. Covers data on features in Bulletin 550-H4.
266J Builders-Providence.

Meters.....Designed to fill the need for a simple, economical device to meter or control the flow of steam, air or other gases. Describes construction, operation, application, specification, etc. Catalog No. 5001.
266K King Engrg. Corp.

Meters.....Describes the Alnor Velometer—a precision-built, self-contained, portable instrument which gives instant, accurate readings of air velocities anywhere. Full details in Bulletin No. 2448-G.
266L Illinois Testing Labs.

Meters.....Helpful booklet covers 150 industrial liquids including water, syrup, liquid sugar, cocoa butter, cocoanut oil, chocolate, flavors, coffee, wine, alcohol, etc. Complete data in Bulletin No. 566-V.
266M Neptune Meter Co.

Meters.....Describes the Gyro Mass Meter...for precise flow measurement. Answers continuous flow batching, inventory, cost-accounting and process control problems. Complete details in illustrated Bulletin 640.
266N Control Engrg. Co.

Meters.....Type 316 stainless steel meter for corrosive liquids . . . is answer to many measurement problems in food, chemical, drug & industrial processing fields—it resists corrosion. Bulletin No. OG-406.
266O Rockwell Mfg. Co.

Meters, Beta Ray H/C.....Provide a fast, accurate means of measuring the percentage of hydrogen, or the hydrogen-carbon ratio, in liquid hydrocarbons. For complete details on valuable instruments request Bulletin 115.
266P Central Scientific Co.

Meters, Continuous Weighing.....Pneumatic balance meters with Brown receivers provide accurate, continuous solids flow and weight measurements. Includes design and method of operation in Data Sheet No. 11.5-3.
266Q Minneapolis-Honeywell

Meters & Controls.....Company makes available information on their line of meters and controls for the process industries. Includes detailed equipment descriptions and illustrations in Bulletin No. 17-F.
266R Bailey Meter Co.

Meters, Electricontact.....Now—explosion-proof—a new Niagara electricontact meter . . . for automatically measuring and controlling liquids in hazardous atmospheres. Complete details in Bulletin No. 33.
266S Buffalo Meter Co.

Meters, Flow.....Provides valuable data on accurate, single stage, variable area industrial flow meters. Built for low cost flow rate measurement in a wide range of production processes. Bulletin No. 1048.
266T Commercial Research Labs.

Meters, Flow.....In performance, flow meters provide unsurpassed precision . . . reliability . . . convenience . . . with minimum maintenance requirements. Offers complete details in Catalog No. 2320.
266U Minneapolis-Honeywell

Meters, Flow.....Presents an illustrated Bulletin which includes the design features, maximum flow capacities, maintenance requirements, and mounting drawings of multiple stage flow meters. No. 1052.
266V Commercial Research Labs.

Meters, Flow.....New design incorporates a rugged simplicity . . . & is virtually trouble-free, requiring little or no maintenance. Includes features, operation, specifications, etc., in illustrated Catalog 1027.
266W Penn Industrial Instrument

Meters, Flow.....Compact, single or multi-tube flow indicators specifically designed to provide full Rotameter accuracy in measuring non-corrosive liquids and gases at moderate pressures. Data in Bulletin 190.
266X Brooks Rotameter Co.

Meters, Flow.....Includes major design & construction features, maximum flow ranges & various combinations of metering tubes & bypass valves which can be used in series. Details in illustrated Bulletin No. 1053.
266Y Commercial Research Labs.

Meters, Flow.....Feature simple design with only three moving parts—no breakdown due to complicated gears and mechanism. Indicate flow within 3% absolute accuracy, even with pulsating flow. Detailed Bulletin.
266Z Henszey Co.

Meters, Liquid.....Valuable reference describes many new meters for industrial liquids. Included are Auto-Stop quantity control meters, Auto-Switch meters, Print-O-Meters, etc. Illustrated Bulletin No. 567.
266AA Neptune Meter Co.

Meters, pH.....Provide new dependability, new convenient size, new maintenance ease (thru plug-in units), and new facility for process automatization. For complete details on Model W request Data File 89-17.
266BB Beckman Instruments.

Meters & Regulators.....20 p. fully illustrated booklet describes Rockwell products...for sewage disposal plants. Includes data on sewage gas meters, sewage gas regulators, water meters, etc. Bulletin No. C-5200.
266CC Rockwell Mfg. Co.

Meters, Vibration.....Simple & compact meters provide accurate, direct indication of both amplitude & velocity of practically any type of oscillatory motion. Contains complete details in Bulletin No. CEC-1505C.
266DD Consolidated Engrg. Corp.

Microspectrophotometers . . . . . Catalog describes the JAco Microspectrophotometer . . . a fast, sensitive instrument for analysis of solutions in both micro and macro quantities. Copy available upon request.
55g *Jarrell-Ash Co.

Microscopy, Fluorescence.....Fluorescence microscopy with fluorochromes is fully described in 30 p. booklet. Reference contains valuable information concerning the application, including formulas and tables.
266EE William J. Hacker & Co.

Monitors, Liquid Level.....A new & different high (to within 1/16") accuracy liquid level monitor for continuous level indication, recording & control in storage & processing tanks. Completely illustrated.
266FF Technifiex Corp.

Monochromators . . . . . Makes available a descriptive Catalog covering the JAco Monochromator . . . a low cost, high resolution, electrically driven monochromator for the visible and ultraviolet regions.
55e *Jarrell-Ash Co.

Ozonators, Laboratory.....Are designed as precision laboratory instruments capable of constant and reproducible operation, positively safe to use. Find complete details on the Model T-23 in descriptive Folder.
266GG Welsbach Corp.

Panels, Control.....Covers control panels for use with weighing and materials handling systems, motor controls, machine tools and plant processes. Included are pictures of 27 typical panels. Bulletin No. 254.
266HH Richardson Scale Co.

Periscopes, Industrial.....For special assignments in remote viewing. Covers construction of typical periscopes, steps necessary in planning for an industrial periscope, etc., in illustrated Bulletin No. 301.
266II Kollmorgen Optical Corp.

Photofluorometers.....New Photofluorometer is latest in the company line of fluorimetric instruments. Offers greatly increased sensitivity and improved stability. Find complete information in Bulletin B-230.
266JJ Coleman Instruments.

Polarimeters, Glass Circle . . . . . unusually fast & convenient. Precision of circle is such that a single reading gives accuracy obtained on other instruments by 2 readings averaged. Catalog offers full details.
55k *Jarrell-Ash Co.

Potentiometers.....Makes the most complete line of precision potentiometers . . . linear and non-linear versions . . . in the widest choice of sizes, mounting styles, resistances. Information in Data File 000.
266KK Helipot Corp.

Potentiometers.....Offers valuable information on high precision, single turn, continuous-rotation potentiometers... three inches in diameter...for servo or bushing mounting. Illustrated Data Sheet No. 305.
266LL Helipot Corp.

*From advt., this issue

POWELL VALVES . . . THE COMPLETE QUALITY LINE . . . POWELL VALVES

. . . THE COMPLETE QUALITY LINE . . . POWELL VALVES . . . THE COMPLETE QUALITY LINE . . .

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Preferred for Precision and Performance

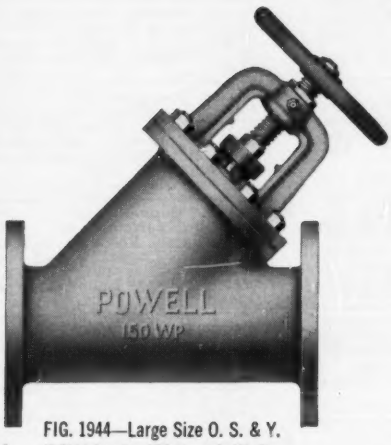

FIG. 1944—Large Size O. S. & Y. "Y" Valve for 150 Pounds W. P.

Powell Valves are the choice of engineers because they know every valve is precision made, meeting every specification—every time.

And there are other good reasons why engineers prefer Powell Valves—because Powell Valves are dependable . . . economical . . . and Powell has the COMPLETE quality line of valves.

Consult your Powell Valve distributor. If none is near you, we'll be pleased to tell you about our complete line, and help solve any flow control problem you may have.

The Wm. Powell Company
Cincinnati 22, Ohio... 109th year

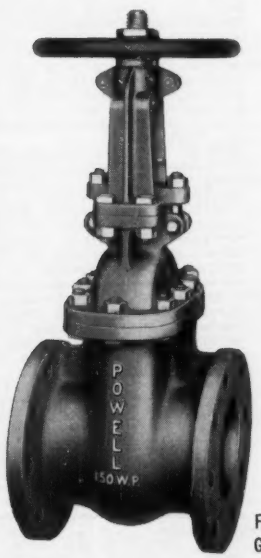

FIG. 2453G—Stainless Steel O. S. & Y. Gate Valve for 150 Pounds W. P.

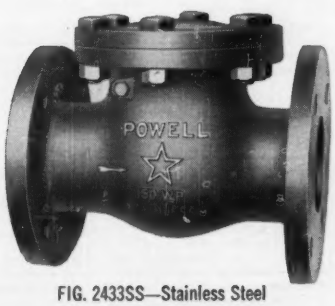

FIG. 2433SS—Stainless Steel Bolted Cap Swing Check Valve for 150 Pounds W. P.

FIG. 1891—Flanged End Liquid Level Gauge. Offset pattern.

POWELL VALVES

Instruments & Controls

Power Operators—Tachometers, Vibrating Reed

Power Operators.....Illustrates versatility of Cylinder Conomotor & its many applications including proportional control of speed changers, valves, pumps & electrical components in new 12 p. Bulletin B-50-2.
268A Conoflow Corp.

Precipitators, Thermal.....Compact thermal precipitator for aerosol sampling—a valuable instrument for: air pollution surveys; smoke abatement records; control of dust & fume exposures; etc. Complete details.
268B Joseph B. Ficklen, III

Projectors, Gamma Ray.....Portable, powerful, shielded, self-contained source of penetrating radiation for non-destructive inspection in maintenance, construction or quality control. Detailed literature.
63 *Metal & Thermit Corp.

Proportioners.....Automatic proportioning units for use with chlorinators described and illustrated with flow diagram, cross-section drawing, installation drawing, and specifications, in Catalog No. 70-20.
268C Fischer & Porter Co.

Proportioning, Automatic.....Furnishes information on Richardson's automatic proportioning systems. Includes complete case history file of Select-O-Weight installation in industry. Illustrated 28 p. Bulletin 0351.
268D Richardson Scale Co.

Proportioning Systems, Carbon Black.....Illustrates a remote-controlled system for proportioning carbon blacks in rubber compounding operations. Covers proportioning cycle. Technical Reference 53A.
268E Richardson Scale Co.

Pyrometer Accessories.....A Bulletin entitled, "Alnor Pyrometer Accessories," is made available to all those concerned with the installation, use and maintenance of pyrometer systems. Illustrated. No. 4181.
268F Illinois Testing Labs.

Pyrometers, Millivoltmeter.....Bulletin covers complete line of millivoltmeter pyrometers & accessories. Includes new Model 580 indicating pyrometers for service up to 4000°F. Illustrated Bulletin No. P1244.
268G Bristol Co.

Pyrometers, Portable.....Line of sturdy precision instruments bring instant, accurate results . . . wherever temperature readings are required—on the production line, in the lab, or in the field. Detailed Bulletin.
268H Illinois Testing Labs.

Readers, Direct.....New features of 1955 direct readers give improved optical stability, more precise monitoring & increased flexibility in spectrum line selection. Find complete information in Bulletin No. 34-C.
268I Baird Associates.

Recorder-Controllers.....Describes the Honeywell quick-connect Tel-O-Set miniature recorder and controller. Includes information on features, operation, specifications, etc. 12 p. illustrated Bulletin No. 7201.
268J Minneapolis-Honeywell

Recorders.....New miniature electrical recorders offer extreme compactness ...Cormag self-shielding mechanism ...A-C and D-C models. Bulletin available covering complete specifications and prices.
268K Weston Elecl. Instrument.

Recorders.....Offer valuable features: pre-calibrated plug-in receiving units; up to 4 pneumatic or electronic receivers—or 2 receivers & 2 integrators; etc. Product specification No. E12-5 available upon request.
268L Bailey Meter Co.

Recorders, Controllers & Telemetering Instruments.....New general bulletin lists and illustrates the complete line of recording, automatic controlling, and telemetering instruments. Bulletin No. DM035.
268M Bristol Co.

Recorders, Laboratory.....Illustrated, 12 p. furnishes facts-and-figures on new laboratory recorder that converts manual laboratory instruments into automatic, recording instruments. Bulletin No. FS-251.
268N Fisher Scientific Co.

Recorders, Multi-Point.....Feature simplified design, circuitry and construction. The chart mechanism is rugged, but so simple in form that there is little or no maintenance. Request detailed reference.
268O Fielden Instrument Div.

Recorders, Operation.....Bulletin describes and illustrates company's line of electrical and mechanical operation recorders, both round- & strip-chart models. Covers features & applications. No. OP1505.
268P Bristol Co.

Recorders, Pressure.....Illustrated, 24 p. reference graphically describes a completely new line of pressure measuring elements . . . with greater operating power and improved accuracy. Request Bulletin No. 6-10.
268Q Foxboro Co.

Recorders, Temperature.....Newly designed Model "1000" Auto-Lite recorder gives permanent proof of temperature behavior. Request valuable catalog describing the many styles of recorders and indicators.
268R Electric Auto-Lite Co.

Recording - Controllers.....Instruments featured in bulletin, which describes potentiometer pyrometer & resistance thermometer controllers with either 2-position or pulse-proportional control action. Bulletin No. 62.
268S Thermo Elec. Co.

Recording Systems, Oscillographic..... From lathe cutting forces to telemetered aircraft data . . . Sanborn oscillographic recording systems prove their versatility. Catalog & technical data upon request.
268T Sanborn Co.

Rectifiers.....Announces the publication of a new, fully illustrated, 12 p. reference describing the complete line of selenium rectifiers for the electroplating & metal finishing industries. Catalog No. 441.
268U American Rectifier Corp.

Refractometers..... There are three general types of Hilger Refractometers available: Abbe type; Chance type; and two types of Rayleigh Interference Refractometers. For complete data, request Catalog.
55j *Jarrell-Ash Co.

Refractometers, Process.....Describes process refractometers (Type 38-201) . . . for monitoring or control of fractionating towers and stream-blending operations. Request valuable Bulletin No. CEC 1839-X1.
268V Consolidated Engrg. Corp.

Regulators.....Describes & illustrates newly developed electronic regulator for speed, voltage, & current (tension) regulation for industrial electric motor drives. Offers complete data. Bulletin K-2076.
268W Reliance Elec. & Engrg.

Regulators, Automatic.....Furnishes completely illustrated Bulletin showing a selection of automatic regulators designed for use in the heating, power generating, and industrial processing fields. 4 p.
268X Atlas Valve Co.

Regulators, Automatic Voltage.....Feature: 115, 230 & 460 volt ratings for single & 3 phase duty in capacities up to 100 KVA; zero waveform distortion; etc. Complete information in Bulletin No. S351.
268Y Superior Elec. Co.

Regulators, Oil-Air Ratio.....Describes Hauck oil-air ratio regulator . . . an automatic & simple means of proportioning oil & air to industrial burners of the two-air connection type. Illustrated Bulletin 722.
268Z Hauck Mfg. Co.

Regulators, Pipeline.....New series designed for use with gases supplied by pipeline systems using comparatively low pressures. Offer long life, trouble-free operation, ease of repair, etc. Catalog ADC 705.
268AA Air Reduction Sales Co.

Regulators, Pressure.....Describes the Series 95 self-contained pressure regulator . . . a simple, sturdy regulator suitable for steam, air, gas, oil, water and other fluids. Details in Bulletin No. C-95.
268BB Fisher Governor Co.

Regulators, Pump Pressure.....Accurately and automatically control discharge pressure from steam operated, reciprocating or turbine driven pumps. Single seated — positive — responsive and accessible. Bulletin 5306.
268CC Leslie Co.

Regulators, Temperature.....Illustrated Bulletin explains where & when to use direct acting, reverse acting & 3-way type thermostatic temperature regulators & lists typical engineering specifications. No. S-6.
268DD Lawler Automatic Controls.

Regulators, Temperature.....Offer high continued performance . . . low continued cost. Features include: tight shut-off; rugged, field-replaceable thermostatic system; instantaneous response; etc. Bulletin ST.162B.
268EE Farris Stacon Corp.

Regulators, Temperature.....Economical temperature regulators offer many advantages: accuracy of control; dependability; minimum installation & maintenance cost; etc. Complete details in Bulletin No. T500.
268FF Spence Engrg. Co.

Regulators, Temperature.....With dependable Sylphon regulator . . . you can make quick changes in temperatures for liquids, air or gases. Sturdily built for years of trouble-free service. Request Catalog LC-D.
268GG Fulton Sylphon Div.

Rotameters.....20 p. book includes: side plate construction & safety features; flow capacity charts; details of design & construction; dimension drawings; tube & float material & design data; etc. Bulletin 115.
268HH Brooks Rotameter Co.

Sampling Systems.....Announces a newly developed sampling system for continuous trouble-free sampling and oxygen measurement of combustion processes. Describes operation and advantages in Bulletin No. 703.
268II Arnold O. Beckman.

Servo Analyzers.....Automatic measurement and plotting of phase and attenuation characteristics. Includes description of components and operating instructions in company's fully illustrated Bulletin No. 1170.
268JJ Minneapolis-Honeywell.

Servo Systems.....New 4 p. booklet pictures & describes a recently-developed servomechanism system. Includes information on construction features & lists the operating characteristics. Technical Reference No. 54B.
268KK Richardson Scale Co.

Spectrographs..... Widely acclaimed Ebert Spectrograph now available with an Order Sorter that presents several orders simultaneously at high dispersion, each as an individual spectrum. Request Catalog.
55b *Jarrell-Ash Co.

Spectrographs.....Baird Associates model 3-M Spectrograph, the first large grating instrument to be used commercially, offers many new refinements which increase its effectiveness. Details in Bulletin 32-C.
268LL Baird Associates.

*From advt., this issue

Spectrographs, Vacuum . . . . . Detailed Catalog describes the Hilger Vacuum Spectrograph . . . for emission and absorption spectroscopy at wave lengths shorter than the transmission limit of the atmosphere.
55h *Jarrell-Ash Co.

Spectrometers . . . . . Catalog covers Atomcounter Direct Reading Spectrometer—compact, self-contained instrument that performs complete analyses in under one minute with standard deviations of 1-2%.
55a *Jarrell-Ash Co.

Spectrometers, Mass.....New company line of analytical mass spectrometers offers greater speed, accuracy and versatility. Pertinent information on features and operation contained in Bulletin No. CEC 1800C-X1.
269A Consolidated Engrg. Corp.

Spectrometers, Mass.....Two companion instruments, Types 21-610 & 21-620, now extend the speed & accuracy of mass spectrometric analysis from the laboratory out into the plant. Bulletin No. CEC-1824A-X16.
269B Consolidated Engrg. Corp.

Spectrophotometers.....Outperform all commercial instruments with respect to resolving power, photometric accuracy, wavelength accuracy, freedom from stray light, etc. Offers details in Data File No. 93-17.
269C Beckman Instruments.

Spectrophotometers.....New 16 p. catalog describes performance, construction, specifications, accessories and modifications on Model 11 and Model 14 Cary recording spectrophotometers. Bulletin No. P53.
269D Applied Physics Corp.

Spectrophotometers.....Versatile and accurate, the G-E spectrophotometer has a range of 380 to 700 millimicrons. Instrument will measure both transparent and opaque samplings. Data in Bulletin No. GEC-307.
269E General Elec. Co.

Spectrophotometers . . . . . For instruments that are flexible, accurate & have a high degree of reliability—specify Cary. Outline of Cary spectrophotometers & description of other instruments in Bulletin CE-1.
215a *Applied Physics Corp.

Spectrophotometers, Infrared.....Newly-revised 12 p. brochure covers the Beckman IR-2 infrared spectrophotometer & accessories. Includes comments on infrared analysis & instrument design. Bulletin 153-E.
269F Beckman Instruments.

Stresometers.....Offers detailed reference, "A New Instrument for Measuring Stress in Electrodeposited Metals." Covers description, theory sensitivity and accuracy, reproducibility, advantages, etc.
269G Joseph B. Kushner.

Switchboard & Panel Instruments..... Descriptive Bulletin presents complete details on a new line of 4½ in. switchboard and panel instruments with clear plastic fronts and "In-line" pointers and dials.
269H Weston Elecl. Instrument.

Tachometers, Hand.....Covers new double range hand tachometers with stop button feature to hold readings until released. Compact, rugged, simple to use, easy to read, etc. Data in illustrated Bulletin 765.
269I Herman H. Sticht Co.

Tachometers, Hand.....Describes the new 3 in 1 hand tachometers which dependably measure the speeds of rotating parts and moving surfaces. Covers benefits, typical uses, operation, etc. Bulletin 103.
269J Metron Instrument Co.

Tachometers, Vibrating Reed.....For portable use, or stationary mounting. Provide valuable features: simple to use; economical; durable; highly accurate; safe on highest speeds; etc. Illustrated Bulletin 770A.
269K Herman A. Sticht Co.

In the photo above you can see how easily a Bros Packaged Watertube Boiler enters your power room. It requires no costly foundations or accessories. It can be lifted or skidded into place. Where clearance is a problem, a Bros unit can be shipped knocked-down for quick assembly at the site.

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No extended work interruptions or erection problems are encountered when you install a Bros Packaged Boiler. It can be lifted or skidded into place. Costly foundations and accessories are not required.

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Instruments & Controls

Telemetering—Weighing Systems

Telemetering.....Furnishes a fully detailed Bulletin describing the company line of Metameter telemeters and accessories. Reference is illustrated by almost 100 photographs and line drawings. No. M1710.
270A Bristol Co.

Telemetering.....Introduces remote transmission systems for water, sewage & process plant uses. Defines telemetering, basic types of telemetering equipment & describes advantages & benefits. Bulletin 9100.
270B Automatic Control Co.

Telemetering.....Telemeter system developed to satisfy demand for a more accurate, reliable, simple system of remote measurement. Features, operation, specifications, etc. in 8 p. illustrated Bulletin 17-11.
270C Foxboro Co.

Telemetering Systems.....Describes the Varec Pulse Code telemetering system ... for reliable liquid level readings over distances limited only by the availability of communications facilities. Bulletin CP-3008.
270D Vapor Recovery Systems Co.

Telephone Systems, Business.....Explains how a huge brewery makes use of a private internal telephone system in controlling quality and integrating complex stages of brewery operation. Illustrated Report No. 104.
270E Automatic Elec. Sales Corp.

Telescopes, Industrial.....A. C. M. I. Borescopes permit close-up visual examination of interior areas & surfaces not otherwise visible. They save time & money & prevent costly dismantling. Request Folder.
270F American Cystoscope Makers.

Temperature-Monitoring Systems..... Can handle wide variety of temperature-monitoring problems when components are used as "building blocks." Includes applications, operation data, specifications, etc. Bulletin 70.
270G Thermo Elec. Co.

Templistik® Instruction.....Critically examines the factors which affect temperature indication by means of Templistiks®. Suggestions on how to determine temperatures in a number of special cases are described.
270H Tempil Corp.

Test Stands & Instrument Panels..... Describes & illustrates major products in instrument & test equipment field: Viz-O-Line test stands; Viz-O-Line instrument panels; Gage Gards; etc. Bulletin 541.
270I Industrial Engrg. Corp.

Testers, Coating-Thickness..... Descriptive literature covers Coatingage portable coating-thickness testers. A-C or battery operation for gaging non-magnetic coatings on magnetic bases. Catalog No. C-100.
332d *Branson Instruments.

Testers, Magnetic Thickness.....Complete description of the Pocket Handi-Gage...magnetic thickness tester for electrodeposited, hot dipped, or painted coatings on steel. Features & directions in Bulletin 159.
270J Gardner Lab.

Testers, Thickness.....Describes portable, battery-operated instruments for measuring thickness of a wide variety of metals, glass, rigid plastics, etc., nondestructively from one side of the work. Catalog No. A2.
332a *Branson Instruments.

Testing, Environmental.....New Folder, "Environmental Testing for Proof of Design," describes such tests as vibration, shock, acceleration, high & low temperature & temperature shock, etc. Illustrated.
270K New York Testing Labs.

Testing Machines, Concrete.....Describes a new 200,000 lb. capacity portable testing machine which makes possible rapid on-the-job testing of concrete and similar materials with laboratory accuracy. Full details.
270L Soiltest, Inc.

Thermocouple Elements.....New Bulletin covers line of Serv-Rite thermocouple elements & bare thermocouple wire. Includes general application data for various types of elements & the different metals. Illustrated.
270M Claud S. Gordon Co.

Thermometers.....Quiksite black-reading thermometers combine easy readability of a black-and-white printed page with inherent advantages of mercury-in-glass instruments. Information in Catalog 19-A.
270N H-B Instruments Co.

Thermometers.....Sturdy all-metal construction resists breakage, makes for far longer life on operating equipment. Exclusive multiple helix assures dependable accuracy during long life. Descriptive Bulletin.
270O Weston Elecl. Instrument.

Thermometers, Dial Indicating & Recording.....Offers specialized line of equipment for recording & indication of temperature & pressure to fill your requirements on many specific applications. Illustrated, 8 p.
270P Electric Auto-Lite Co.

Thermometers & Temperature Indicators.....Fully illustrated, 100 p. describes American line—industrial glass, dial & recording—mercury, vapor pressure, gas, bi-metal & thermocouple actuation. Catalog 100.
270Q Manning, Maxwell & Moore.

Transducers.....Company announces the availability of literature describing the Vernistat...a new type of transducer. Includes data on advantages, construction, specifications, etc. in fully illustrated, 6 p.
270R Perkin-Elmer Corp.

Transducers, Fluctuating-Pressure..... Describes miniature flush-diaphragm strain-gage transducers. Offers dimensional & construction data in mechanical drawings & gives electrical circuitry. Form No. PT654.
270S Electronic Engrg. Assoc.

Transmitters, d/p Cell.....Pioneered by Foxboro seven years ago ... the d/p Cell Transmitter established a new standard of performance in flow measurement and control. Describes design features in Bulletin 13-11.
270T Foxboro Co.

Transmitters, Pneumatic.....Operating details & specifications of new force balance Rotameter float position transmitter for use with all types of pneumatic receivers &/or control instruments. Bulletin No. 170.
270U Brooks Rotameter Co.

Transmitters, Pneumatic.....Metagraphic transmitters set new standards of accuracy & reliability in measuring & transmitting readings of temperature, pressure, vacuum, liquid level, etc. Bulletin A105.
270V Bristol Co.

Transmitters, Pneumatic.....36 p. reference covers transmitters for measuring flow, pressure, level or density. Describes & illustrates 22 different models, gives hook-ups, ranges, performance data. Data Book 1004.
270W Republic Flow Meters Co.

Transmitters, Pressure.....Can measure pressures within ½% of 20-40 psi shiftable range spans. Operate on simple force-balance principle. Includes valuable features & advantages in Bulletin No. 98097.
270X Taylor Instrument Cos.

Transmitters, Temperature.....Rugged, versatile temperature transmitters improve remote control. Give better performance with lower installation and maintenance cost. Complete details in Bulletin No. 13-17.
270Y Foxboro Co.

Transmitters, Time-Pattern..... Lists complete specifications of instrument which positions set point indices of one or more instruments according to a definite time-pattern. Specification Sheet No. 287-1.
270Z Minneapolis-Honeywell.

Tubes, Dall Flow.....Technical Bulletin describes new short differential producing metering device. Covers recovery characteristics, accuracy, applications, range, flow formula, laying length, etc. No. 115-L3.
270AA Builders-Providence.

Valve Operators.....Functional design & durable materials of construction of operators insure their long, dependable service—with always an immediate response to positioning force. Illustrated Bulletin 109-A.
270BB Hammel-Dahl Co.

Viscometers.....23 p. reference, "Solutions to Sticky Problems," includes sections on: How the Brookfield Viscometer Works; A Simple Calibration Check; Making a Good Measurement; etc. Illustrated.
270CC Brookfield Engrg. Labs.

Viscometers.....For recording or recording-controlling of viscosity in industrial plants. Illustrated Bulletin explains what they are, how they work and cites numerous advantages for precision instruments. No. 16.
270DD Norcross Corp.

Viscometers.....Built by Swiss craftsmen ... to operate in a vessel—by-pass—pipeline ... at extremes of pressure—viscosity—temperature. For complete information request 8 p. fully illustrated Bulletin.
270EE Drage Products.

Viscosity Control.....Describes the Brookfield Viscometran ... for continuous indication, recording & control of viscosity under process conditions. Includes principle of operation & advantages. Fully illustrated.
270FF Brookfield Engrg. Labs.

Viscosity Measuring Instruments..... Measure, record and control viscosity —instantly, automatically, continuously—with the Ultra-Viscoson. Covers data on features, operation, applications, etc. Illustrated.
270GG Bendix Aviation Corp.

Watches, Stop.....Precision timers with coil spring shock absorbers. Offers new Catalog describing line of 60 different heavy-duty stop watches with varied applications in industry, research, and medicine. 12 p.
270HH Arthur S. La Pine & Co.

Watches, Stop, Electric.....Recommended for radioactivity counting systems in atomic laboratories, in addition to conventional use as accurate, split-second timers in other research work. Data in Bulletin 646.
270II Precision Scientific Co.

Weighing & Calibrating Systems..... Company makes available an illustrated Bulletin describing their new weighing and calibrating system. Includes data on operation, application, specifications and performance.
270JJ Morehouse Mach. Co.

Weighing Systems.....For measuring load, fluid pressure, or torque more accurately and economically. Offers Booklet No. 4106 covering tank weighing and also Booklet No. 4105 with data on crane scales.
270KK Baldwin-Lima-Hamilton.

→Want more information on any of these items? Just write its code number on one of the postcards inside the back cover, then mail it to us. It's that easy now.

*From advt., this issue

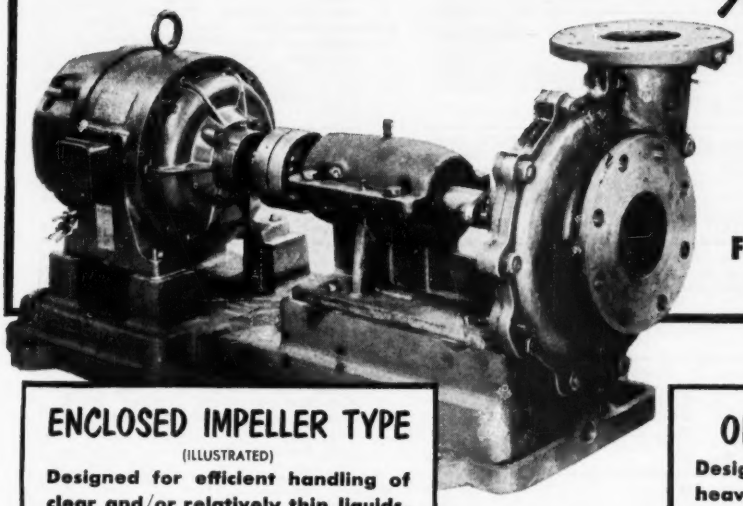
MOVING LIQUIDS?

CHEMICALS • OILS • JUICES • CLEAR LIQUIDS • ACIDS • WHITE WATER • SLURRIES • BREWERY MASH • PAPER STOCK

You can depend on...

FREDERICK SSV PUMPS

FOR EFFICIENT, CAREFREE SERVICE



ENCLOSED IMPELLER TYPE

(ILLUSTRATED)

Designed for efficient handling of clear and/or relatively thin liquids.

OPEN IMPELLER TYPE

Designed for efficient handling of heavy and/or relatively thick liquids.

CHECK ALL THESE FEATURES

- **Pump sizes from 1" to 4" discharge openings.**
- **Pump capacities from 50 up to 700 U. S. GPM.**
- **Heads from 30 up to 220 feet.**
- **Pump speeds can be varied to suit the driving media.**

CONSTRUCTION MATERIALS

Frederick SSV Pumps are constructed of the best materials for your particular pumping operation. Standard construction includes nickel iron casing with bronze or cast iron trim but, for special pumping requirements, materials used include stainless steel, bronze, nickel, monel or any other machinable alloy.

Frederick SSV pumps are in use today in plants all over the country, giving efficient, economical service with a minimum of maintenance and production down time. Many have been in service 20-25 years. In one plant alone, over 1000 SSV pumps have been installed. Our skilled staff can analyze your pumping problem and recommend the proper type of SSV pump. Send your request to our Pump Division—ask for Bulletin 107.

CONSTRUCTION ADVANTAGES

- Pump casings are vertically split for easy accessibility. Mounted on a swivel to permit placing discharge in any desirable position.
- Pump openings, both suction and discharge, flanged to permit easier connecting and dis-connecting to joints.
- One-piece impellers, securely attached to shaft by stout key and lock nut, or threaded, give long service.
- Pump bearings mounted in sturdy frame horizontally split for easier accessibility.
- Extra long stuffing box provides for oversize stuffing. Mechanical seal also available for minimum leakage.
- Pump coupling flexible for direct connection to drivers or can be arranged for belt drive.
- Pump speed, pump openings, etc. can be varied to suit your particular requirements. Frederick SSV pumps are custom-built to meet your needs.

FREDERICK PUMPS

FREDERICK IRON & STEEL, INC.

FREDERICK *Established 1890* **MARYLAND**

Instruments & Controls

Wire, Thermocouple & Extension—X-Ray Units, Micro-Focus

Wire, Thermocouple & Extension.....Issues a new Bulletin describing & illustrating complete company line of thermocouple wire & thermocouple extension wire. Covers various sizes, metals, insulations, etc.
272A Claud S. Gordon Co.

X-Ray Units, Micro-Focus.....Wide application in both diffraction & microradiograph. Features low exposure time, high resolution, & provision for utilization of special techniques. Request Catalog.
551 *Jarrell-Ash Co.

Pipe, Fittings, Valves

Caps & Plugs, Polyethylene.....Easy-to-apply caps & plugs of tough, flexible polyethylene offer inexpensive protection for tubing, valves, fittings, hydraulic components & many machined parts. Illustrated.
272B Protective Closures Co.

Connections, Pipe.....12 p. combination engineering manual & catalog covers new Graloc line of Universal pipe connections, unions & bleeder valves. Includes construction, operation, benefits, specifications, etc.
272C Grav Tool Co.

Connections, Pressure Vessel.....Comprehensive reference data on complete line of pressure vessel connections, manways, necks, nozzles, etc. Included are useful tables and specifications. 70 p. Catalog 10-53.
272D Lenape Hydraulic Pressing.

Connectors, Speed.....Manufacturer presents a new speed connector & automatic valve for gas, air, or liquid testing. Corrosion-resistant materials featured in construction. Find information in Catalog No. 354.
272E Mechanical Products Corp.

Couplings.....Offers industry a new & more efficient coupling having gear teeth which are cut on a segment of a sphere. Applied successfully in aircraft & other specialized fields. Request detailed Catalog C-540.
272F Philadelphia Gear Wks.

Couplings.....Steelflex couplings offer unique multiple protection for connected machinery—overcome damaging conditions of shock loads, shaft misalignment and vibration. Engineering Bulletin covers details.
272G Falk Corp.

Couplings, Crown.....Describes company line—includes illustration showing exploded view of coupling & a table containing data necessary to select correct coupling for a given application. Bulletin No. 2203.
272H De Laval Steam Turbine Co.

Couplings, Flexible.....New Selection Guide offers technical data—ratings, drawings, specifications, service factors, plus information on various uses of rubber-bronze bushed flexible couplings. Bulletin No. 57.
272I Ajax Flexible Coupling Co.

Couplings, Fluid.....Illustrated. 14 p. offers full installation and performance data on company line. Graphically shows the ease of applying fluid couplings on any type industrial equipment. Bulletin 144-D.
272J Twin Disc Clutch Co.

Couplings, Hose.....Quick connect-disconnect hose coupling . . . for water, oil, steam, gas and chemical lines . . . provides permanent freedom from leakage. Covers complete data on construction. Illustrated, 16 p.
272K Titeflex, Inc.

Couplings, Pipe.....Information on the All-Flex ball bearing swivel pipe coupling. Made with quality materials... of sound engineering design...machined to close tolerances...etc. Catalog No. 234L.
272L H & N Mfg. Corp.

Elbows, Long Tangent.....Feature many advantages: save pipe; often eliminate short nipples and their extra welds; save time and money in lining up and clamping pipe and fitting; etc. Catalog No. 54.
243 *Midwest Piping Co.

Faucets, Stainless Steel.....Describes and illustrates a new corrosion-resistant stainless steel, fume-tight sanitary faucet with KEL-F sealing rings. Covers advantages, design, materials of construction, etc.
272M Economy Faucet Co.

Fittings.....Describes HP and HT small size high pressure and high temperature ball bearing swivel fittings. Data on construction, application, dimensions, specifications, weights, etc. Completely illustrated.
272N Emsco Mfg. Co.

Fittings.....Offers Klinger Master Catalog describing the complete range of products . . . compressed asbestos sheet packings for all purposes, valves, cocks, level gages, synthetic and silicon rubbers, etc.
272O Klinger Corp. of America.

Fittings & Flanges, Welding.....Company offers the most complete line of welding fittings and flanges. Compiles valuable data on many phases of piping application. Request "Allowable Working Pressures."
272P Tube Turns.

Fittings, Flare.....Triple-lok fittings are easiest, fastest & safest way to tube up even in close quarters. Leakproof even under severe conditions of vibration, high pressures & temperatures. Catalog No. 4300.
272Q Parker Appliance Co.

Fittings, Forged Stainless & Alloy Steel.....High strength screw-end & socket-welding fittings available in a variety of alloy materials for high temperature & corrosive services. Bulletin No. S-1-55.
173b *Watson-Stillman Fittings.

Fittings, Forged Steel.....Wherever strong, tough pipe joints are needed . . . Watson Stillman forged steel fittings provide a safety factor against costly piping failures. Details in Bulletin No. A3-50.
173a *Watson-Stillman Fittings.

Fittings & Hose Assemblies.....New Hoze-lok fittings and hose assemblies (for medium and high pressure hydraulic service) offer better performance, easier make-up, greater reusability. Catalog No. 4400.
272R Parker Appliance Co.

Fittings, Pipe.....Presents newest catalogue of stainless steel pipe fittings which shows all standard pipe fittings and flanges, flanged fittings, butt weld fittings, etc. Request fully illustrated Catalog No. 653.
237b *Camco Products.

Fittings, Pipe, Polyvinyl Chloride.....New illustrated Bulletin provides valuable information on injection molded unplasticized polyvinyl chloride pipe fittings and flanges. Includes features and properties.
272S Tube Turn Plastics.

→Want more information on any of these items? Just write its code number on one of the postcards inside the back cover, then mail it to us. It's that easy now.

Fittings, Stainless Steel.....Complete details and specifications covering the full line of Tri-Clamp stainless steel fittings are available in company's informative reference. Request Catalog No. 1-154.
272T Tri-Clover Div.

Fittings, Stainless Steel.....Quikupl Stainless Steel Fittings . . . makes available valuable Technical Manual which covers the design, applications & limitations of revolutionary new type stainless fittings.
196g *Cooper Alloy Corp.

Fittings, Stainless Steel.....Three good reasons for purchasing Cooper Alloy stainless steel fittings—availability (quick—when you need it) . . . superior quality . . . complete line. Request Bulletin No. Q100.
272U Cooper Alloy Corp.

Fittings, Stainless Steel.....Company announces the availability upon request of a complete stainless steel fittings, catalog giving engineering drawings, dimensions and basic material data. Catalog No. 55F.
196i *Cooper Alloy Corp.

Fittings, Stainless Steel.....“Newscast” contains case histories showing how Quikupl—stainless steel fitting which can be assembled and disassembled without threading, flaring or welding—cuts time and costs.
196r *Cooper Alloy Corp.

Fittings, Stainless Steel.....Offer entirely new concept of fitting design & fabrication—much greater speed & ease of installation—savings in original investment cost—etc. Details in new Bulletin No. 1055.
272V Tri-Clover Div.

Fittings, Stainless Steel.....New stainless steel fittings will assure you of long, trouble-free service in tough piping applications . . . will reduce down-time and cut maintenance costs. Bulletin No. S-3-55.
173d *Watson-Stillman Fittings.

Fittings, Tube.....New Intru-lok tube fittings can be quickly installed by anyone. Simply push tube in, then tighten nut. Designed for instrumentation lines of ¼ thru ½ inch. O. D. Request Catalog No. 4320A1.
272W Parker Appliance Co.

Fittings, Tube.....Supplies pertinent data on company line of tube fittings. Withstand several times the vibration of compression or flared tube fittings, and they are faster to install. Bulletin No. L-9335.
272X Samuel Moore & Co.

Fittings, Tube.....Complete, new Technical Data Catalog describes entire line of Koncentrik stainless steel flared tube fittings. Includes information, on application, installation, performance, etc.
272Y Special Screw Products Co.

Fittings, Tube.....Introduces easy-to-use Parker Intru-Lok tube fittings for instrumentation lines of ¼" through 1" O.D. For complete product information, request new Parker Intru-Lok Catalog No. 4324.
325b *Parker Appliance Co.

Fittings, Tube.....Announces Parker Weld-lok tube fittings . . . machined from high-quality steel or stainless steel bar stock and forgings . . . for tubing ¼ thru 2 in. O.D. Information in new Catalog No. 4370.
325a *Parker Appliance Co.

Fittings, Welding.....Company's line of welding fittings cast in all corrosion and heat resistant alloys...gives you freedom of design on piping systems. Descriptive booklets provide essential information.
272Z Electric Steel Foundry Co.

Fittings, Welding.....Company's line of Key-Kast fittings are available in every shape, size, and schedule—in low and intermediate alloys and various stainless steels. Find complete details in new Bulletin.
272AA Key Co.

*From advt., this issue

Flange Specifications.....Company announces the development of a new Flange Specification table for ASA and MSS Flanges in a convenient, slide rule form. Pocket-size reference is available upon request.
237a *Camco Products Co.

Flanges.....First in flanges—company started first and has remained first ...in scope of flange types, sizes, weights, and materials...in volume produced. Presents valuable booklet, "Modern Flange Design."
273A Taylor Forge & Pipe Wks.

Hangers, Pipe.....With the Blaw-Knox functional spring hanger, you can readily control both lateral & longitudinal swing movements of hanger rod up to 7 degrees. Contains full information in Bulletin No. 54.
273B Blaw-Knox Co.

Hose.....A new line of hose designed to handle hot acids, all plating solutions is now available for shipment out of stock in sizes of 1", 1½", 2" & 2½" ID. Offers descriptive Data Sheets & prices on request.
273C Carl Buck & Assoc.

Hose & Ducts.....Industrial installations of Flexaust hose & Portovent duct for moving air, dust, fumes, gases, and materials efficiently and at lower cost are described in fully illustrated Bulletin No. 40.
273D Flexaust Co.

Hose, Metal, Flexible.....Provides valuable information on flexible metal hose...for Diesel engine installations —marine and industrial. Includes data on types of hose, installation, etc. Bulletin EH-50.
273E American Metal Hose Branch.

Hose, Metal, Flexible.....Manufacturer provides a complete description of varied applications for flexible metal hose & tubing. Shows how tubing is designed, used & installed. Data contained in Catalog CC-400.
273F American Brass Co.

Hose, Metal, Flexible.....Ideal for difficult fluid and gas handling jobs. Durable and leak-proof for conveying, controlling movement and vibration, correcting misalignments, etc. Full details in Bulletin No. 20D.
273G Atlantic Metal Hose Co.

Hose, Rubber.....Announces a new hose check list to obtain longer hose life and better performance. Designed for wall mounting, easy-to-read, 11-point check list high-lights 4 common abuses of hose with drawings.
273H Thermoid Co.

Joints, Ball.....Ball joints are employed where low cost, leakproof, movable joints are needed in piping handling steam, air, oil, water, gas or chemicals. Many models available. Full details in Catalog No. 215A.
273I Barco Mfg. Co.

Joints & Couplings.....Teflon expansion joints and flexible couplings absorb shock, vibration, thermal expansion and contraction. Connect unlike piping ends and nozzles. Covers complete data in Bulletin FC-952.
273J U. S. Gasket Co.

Joints, Expansion.....There's a Garlock expansion joint for your piping applications . . . to stop vibration, flange breakage—to relieve stresses and strains in piping and equipment. Expansion Joint Folder AD-137.
273K Garlock Packing Co.

Joints, Expansion, Piston-Ring.....In a full range of sizes, wtih 4", 8" or 12" traverse per slip, for pressures to 400 psi & greater & for temperatures to 800°F. & higher. Advantages covered in Bulletin 35-15H.
273L American District Steam Co.

Joints, Revolving.....Superior design of these Barco revolving joints insures trouble-free performance, minimum roll drag. & up to 50% power savings. Ratings to 250 psi (steam); 450°F. Catalog No. 300A.
273M Barco Mfg. Co.

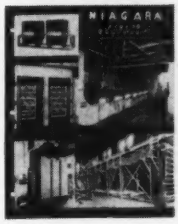
AIR Engineering EQUIPMENT

AIR CONDITIONING

Bulletins describe methods of obtaining precise control of temperature and moisture to help you make your product in any climate at any season. Illustrated with diagrams and photographs.

BULLETIN No. 122
BULLETIN No. 112

DRYING AND DEHUMIDIFYING



Bulletins illustrate air conditioning cabinet and drying installations including siccative coatings, paper, plastics, provisions, confectionery, pharmaceuticals, metallurgical uses.

BULLETIN No. 88
BULLETIN No. 112

HIGH PRESSURE STEAM HEATING

Bulletin describes method completely utilizing both the sensible and latent heat of high pressure steam. Trustworthy, long lived equipment for heating or process.

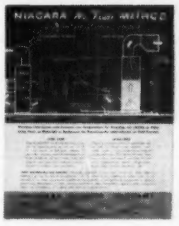
BULLETIN No. 109

AERO AFTER COOLER

Describing equipment for cooling compressed air or gases, holding temperatures below ambient atmospheric to prevent condensation of moisture. Includes application to air liquefaction systems.

BULLETIN No. 130

COOLING AND FREEZING



Bulletins describe Niagara "No-Frost" method; production of extreme low temperature for industrial uses or food freezing, precooling and storage.

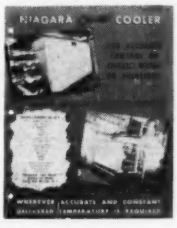
BULLETIN No. 95
BULLETIN No. 105

REFRIGERANT CONDENSING

Bulletins describe evaporative refrigerant condensers providing protection against scaling of tubes, controlling of compressor head pressures, saving condenser water.

BULLETIN No. 111
BULLETIN No. 123

LIQUID COOLING



Cooling for chilled water or solutions, with elimination of freeze-up danger, with rapid chilling of large fluid volume and close temperature control.

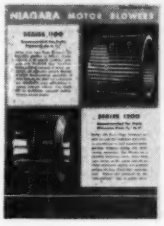
BULLETIN No. 104

VAPOR CONDENSING

Providing high vacuum, independent of a large supply of cooling water. Solves the problems of water supply and disposal. Fully automatic. Saves power. Saves steam.

BULLETIN No. 129

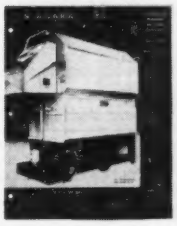
MOTOR BLOWERS



Bulletin describes blowers in two series up to 4" static pressure. Available in one, two and three fan assemblies. Applicable to ventilating, drying, air conditioning.

BULLETIN No. 89

AERO HEAT EXCHANGER



Bulletins describe evaporative cooling apparatus that keeps control of temperature within two degrees by modulating the flow of air. Saves 95% of cooling water. Provides heat when needed.

BULLETIN No. 120
BULLETIN No. 124

For further information write Dept. CE

NIAGARA BLOWER COMPANY

405 Lexington Avenue **New York 17, N. Y.**

Pipe, Fittings, Valves

Joints, Revolving—Tubes, Steel

Joints, Revolving.....Describes high speed revolving joints for clutches, chucks and machine tools. Easy to install where space is limited; economical. Precision built for rugged service. Catalog No. 307.
274A Barco Mfg. Co.

Joints, Swing.....Covers information & detailed specifications on 35 styles of bronze & steel, plain & flanged swing joints. Recommendations & data on use, care & maintenance of equipment. 12 p. Catalog No. F-8.
274B OPW Corp.

Joints, Swing.....Especially designed to provide for the necessary movement & flexibility in metal pipe loading or unloading lines which handle petrochemicals, oil, alcohol & other fluids. Request Catalog No. 400.
274C Barco Mfg. Co.

Joints, Swivel.....Chiksan manifolding operations facilitate transfer of all types of fluids safely & rapidly under extreme climatic conditions with no possibility of cross contamination. Data in Catalog No. 53-C.
274D Chicksan Co.

Joints, Swivel.....These self-aligning swivel joints offer highest flexibility in piping. Specifications, dimensions, application data for entire line. 14 styles & 8 sizes available. Data in Catalog No. 265A.
274E Barco Mfg. Co.

Joints, Swivel.....A new, 32 p. Catalog covers the complete company line of ball-bearing swivel joints & other products, including loading racks, manifolding lines, all-metal marine & barge hose, etc. No. G-4.
274F Chicksan Co.

Joints, Swivel.....Company produces a complete line of high pressure hydraulic swivel joints for use with small diameter tubing or pipe. Full details furnished in illustrated reference, Catalog No. 269.
274G Barco Mfg. Co.

Nozzles, Spray.....Company provides a 48 p. industrial catalog with full data on thousands of standard and special nozzles—for every type of spraying. Also information on related equipment. Catalog No. 24.
274H Spraying Systems Co.

Nozzles, Spray.....Reach a new peak in spraying efficiency . . . with Yarway non-clog nozzles. Reference includes capacities, dimensions, application information, etc. Request Spray Nozzle Book No. N-617.
274I Yarnall-Waring Co.

Nozzles, Spray..... Company makes available on request a completely detailed Catalog which provides valuable data on Spraco Nozzle line. Includes information on full cone, flat spray & hollow cone types.
274J Spray Engrg. Co.

Nozzles, WaterFog.....New light weight special aluminum-alloy WaterFog nozzles will extinguish or control fires in both ordinary combustibles and flammable liquids faster...and with less water. Illustrated.
274K Rockwood Sprinkler Co.

Pipe, Clay.....Illustrated Bulletin covers special uses of Screw-Seal clay pipe for industrial installations. Provides valuable features: leak, rust & corrosion-proof; flexible; fast, easy installation; etc.
274L Robinson Clay Product Co.

Pipe, Ducts & Fittings.....Company announces a new corrosive resistant line of vent pipe, ducts, and fittings made of polyester bonded fiber glass. Furnishes a Bulletin outlining resistant properties.
274M Du Verre, Inc.

*From advt., this issue

Pipe & Fittings.....Offers pertinent information on stainless steel welding fittings & welded pipe. Covers 90° elbows, 45° elbows, 180° returns, straight tees, stub ends, caps, etc. Specifications. Catalog No. 53.
274N Pypon Co.

Pipe & Fittings.....For corrosion-resistant piping. Impervious graphite pipe & fittings readily installed, long lasting, easily maintained, unaffected by most corrosive fluids. Request Catalog No. S-7000.
274O National Carbon Co.

Pipe & Fittings, Glass.....Glass pipe & fittings for full-scale production operations. Strengthened by end-tempering & feature corrosion-resistance, non-contamination, etc. Catalogs EA-1 & EA-3 offer full details.
274P Corning Glass Wks.

Pipe & Fittings, Polyvinyl Chloride..... Furnishes information on ½" to 4" line of normal impact & high impact unplasticized polyvinyl chloride pipe & fittings, plus properties & characteristics data, etc.
338 *Alpha Plastics.

Pipe, Fittings & Valves..... Impervite pipe, fittings & valves feature complete immunity to almost all corrosives. It is lightweight, non-contaminating & unaffected by thermal shock. 12 p. Catalog.
295b *Falls Industries.

Pipe, Fittings & Valves.....For those operations which require the conveying of corrosive liquids. Feature valuable advantages of easy installation, added safety, no leakage, etc. Catalog details company line.
274Q Saran Lined Pipe Co.

Pipe, Fittings & Valves, Plastic..... Complete technical data on Dur-Ace . . . new general-purpose corrosion-resistant plastic pipe with exceptional impact strength & toughness. Illustrated Bulletin 80-A.
274R American Hard Rubber Co.

Pipe, Fittings & Valves, Plastic..... Exceptionally resistant to most salts, alkalis & nonoxidizing acids at temperatures below 150°F; high burst strength & impact pressure; etc. Illustrated Brochure.
Cov.—3 *Walworth Co.

Pipe Installation, Glass.....Pipe is easy to install & low in installed cost compared with other corrosion-resistant materials. Available in 6 standard sizes from 1- to 6-inch. I. D. inclusive. Installation Manual No. PE-3.
274S Corning Glass Wks.

Pipe, Plastic.....Ace hard rubber—now more than a century old—long the finest corrosion-resistant pipe available. Widest variety of fittings of any rigid non-metallic pipe. Details in Bulletin No. CE-51.
274T American Hard Rubber Co.

Pipe, Plastic.....General-purpose moderately priced rubber-plastic pipe handles most common chemicals to 170°F . . . except few strong acids & organic solvents. Tough, odorless, tasteless. Bulletin No. 80.
274U American Hard Rubber Co.

Pipe, Saran.....An old stand-by with many new uses—odorless, tasteless, general-purpose rigid pipe & semi-flexible tubing. Highly resistant to most chemicals. Find complete details in Bulletin No. 351.
274V American Hard Rubber Co.

→Want more information on any of these items? Just write its code number on one of the postcards inside the back cover, then mail it to us. It's that easy now.

Pipe, Shower.....Simple, mechanical, cleaning action assures the ultimate in constant, uniform spray pressure & cleaning efficiency coupled with the minimum in water consumption. Details in illustrated, 6 p. Folder.
297a *Emerson Mfg. Co.

Pipe, Steam Traced.....Alcoa's new steam traced pipe saves 30% of labor costs, reduces material and insulation costs over conventional steam-jacketed lines. Makes available descriptive booklet, "Unitrace."
274W Aluminum Co. of America.

Pipe & Tubing.....Informative folder, "Helpful Hints on Hand Threading Stainless Steel Pipe & Tubing," discusses die stock, dies, speed, cutting oils, assembly of threaded joints. Bulletin No. TDC-147.
274X Babcock & Wilcox Co.

Piping.....A presentation of corrosion fundamentals of plumbing & heating systems. Data based on analysis of thousands of piping systems in which wrought iron is specified to help solve corrosion problems. 32 p.
274Y A. M. Byers Co.

Piping, Copper.....The special advantages of copper piping: costs less to install & maintain; joins quickly; handles easily; won't rust; needs fewer fittings; bends to clear obstructions. Publication No. B-1.
274Z American Brass Co.

Piping Design . . . . . Tube turns is recognized as a leading source of authoritative information on piping design. For complete details, request their valuable product bulletin, "Pipe and Fittings Material."
169-70 *Tube Turns.

Piping for Industry.....Complete prefabricated piping systems for all pressures and temperatures . . . plus a full line of functional spring hangers, constant support spring hangers, etc. Bulletin No. 2443.
274AA Blaw-Knox Co.

Piping, Stainless Steel.....Compiles information on numerous phases of piping application. Makes available upon request a valuable booklet on "the why and where" of stainless steel piping. Fully illustrated.
274BB Tube Turns.

Piping, Stainless Steel.....Informative literature outlines methods of bending and joining stainless pipe and discusses the problem of light wall versus heavy wall pipe. Copies of 6 p. Bulletin TB-356 on request.
274CC Babcock & Wilcox Co.

Selectors, Flange & Coupling.....Lists O.D. of flange, thickness, O.D. of raised face, no. of holes, diameter of holes, diameter of bolts, bolt circle—for series 15 & 30 flanges. Completely revised edition.
274DD Nooter Corp.

T-Heads.....Engineered and designed for use in fixed piping systems. It has a directional wide angle, medium velocity discharge and is installed in a pendent position. For automatic as well as open deluge use.
274EE Rockwood Sprinkler Co.

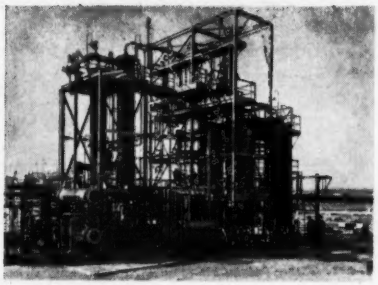
Tees.....Illustrated booklet, "Brawny," introduces new company line of carbon steel welding tees. Covers all the advantages and furnishes list prices and complete dimensional and weight information. No. STF-2.
274FF Northern Indiana Brass Co.

Tubes, Flow.....Gentile flow tube measures flow in either direction. Provides detailed information on the numerous features—reversibility . . . low installed cost . . . accuracy . . . lowest head loss. Bulletin FT-101.
274GG Foster Engrg. Co.

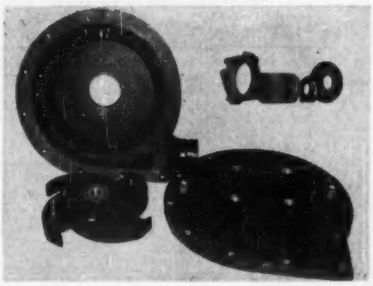
Tubes, Steel.....“One source” supply offers seamless and welded stainless, and seamless carbon and alloy steel tubes in a complete range of sizes and analyses. Details of company's line in Globe General Catalog.
274HH Globe Steel Tubes Co.

WHERE HAVEG EQUIPMENT IS INSTALLED

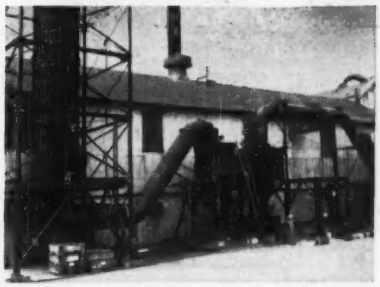
TRADE MARK REG. U. S. PAT. OFF.



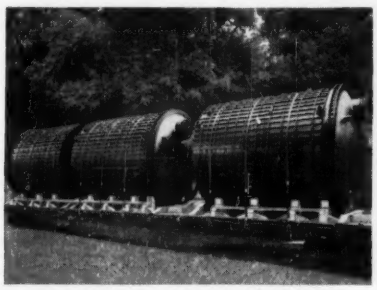
PETRO-CHEMICAL plants have been designed and built primarily around the use of Haveg . . . in pressure tanks, absorbers, pipe.



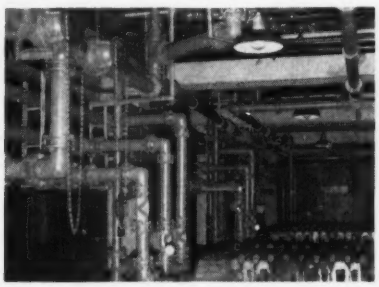
PUMP PARTS, made from Haveg, used in hot acid, last over 33 months without replacement. Even longer life is common.



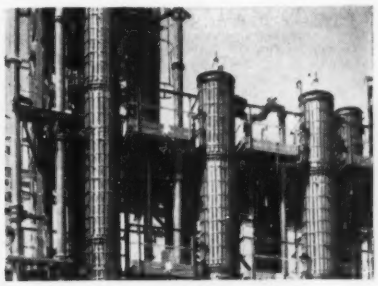
STACKS AND FUME SYSTEMS of Haveg pay for themselves by lasting for years without repairs. This stack is 200′ high, 5′ dia.



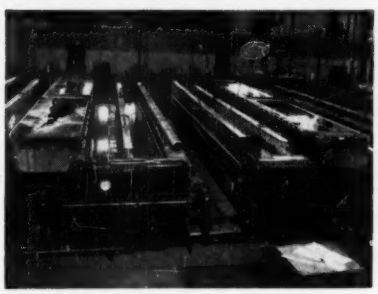
BIG TANKS can be made rapidly from Haveg. The world's biggest single-piece molded tanks, each holds 7500 gallons.



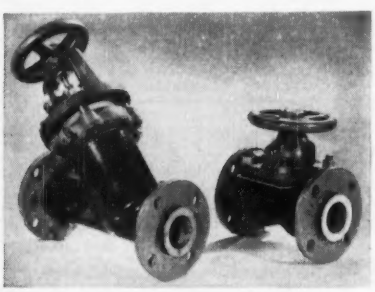
PIPE and fume duct made of Haveg withstands rapid temperature changes, takes high heat with complete safety, is easily installed.



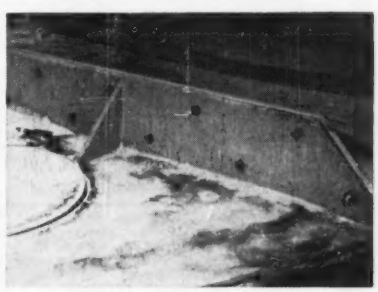
TOWERS bigger, better, more corrosion resistant are made from Haveg, the construction material that widens design ranges.



PICKLING TANKS of Haveg prevent specking or flaking, reduce rejects, make plating uniform. Molded tanks can be made any size.



VALVES of Haveg are made in Y-valve and diaphragm styles, with interchangeable parts, smooth operation, long service life.



POLYESTER-GLASS equipment is now being made by Haveg—towers, ducts, tanks, linings. Shown is a P-G acid tank cover.

Chemical Corrosion has been Controlled!

Haveg is a molded rigid plastic material made from acid-digested asbestos and synthetic resins selected for difficult service with corrosives. It can be used continuously in a high range of process temperatures with safety and a proven history of performance.

Also, to more completely cover customers' requirements, the Haveg Corporation has added to its long list of corrosion-resistant products: Polyester-glass and polyvinyl chloride equipment. A wide range of acid-proof cements for brick work and field fabrication. Specialties made from duPont's Teflon—sheets; gasket, packing, diaphragm materials; rods, tubes.

For full information, call the sales engineer listed, see Chemical Engineering Catalog, write for new 32-page Bulletin C-12.

ATLANTA, Exchange 3821 • DETROIT 39, Kenwood 1-1785
CHICAGO 11, DElaware 7-6088 • HOUSTON 4, Jackson 6840
CLEVELAND 20, Washington 1-8700 • LOS ANGELES 14, Mutual 1105
WESTFIELD, N. J., Westfield 2-7383

HAVEG CORPORATION

TRADE MARK REG. U. S. PAT. OFF.

900 GREENBANK ROAD • WILMINGTON 2, DELAWARE
FACTORY: MARSHALLTON, DEL. WYman 8-2276

Pipe, Fittings, Valves

Tubing—Valves, Butterfly

Tubing.....Flexible stainless steel tubing engineered and manufactured to get desired flexibility with greatest durability. Includes full description, construction, uses, etc., in illustrated Bulletin STC-1.
276A American Metal Hose Branch.

Tubing.....Rugged, heavy-duty tubing for conducting corrosive liquids or gases. Available in six standard formulations to meet a wide range of chemicals and other operating conditions. Bulletin No. T-87.
276B U. S. Stoneware.

Tubing.....Publishes general tubing catalog which condenses into 8 p. the pertinent information needed for the selection and application of 46 principal analyses of tubing. Bulletin No. 40 available upon request.
276C Superior Tube Co.

Tubing & Fittings.....16 p. covers installation accessories for lubrication, hydraulic, steam, liquid & air applications. Data, specifications & prices on tubing, tube fittings, hose, etc. Catalog No. 17-D.
276D J. N. Fauver Co.

Tubing & Line Pipe, Fibercast.....A product of thermosetting resins reinforced with glass fibers and cured by heat. Covers advantages, general handling instructions, installation instructions, etc. Illustrated.
276E Fibercast Corp.

Tubing, Mechanical, Stainless Steel..... Outlines the numerous advantages offered to design & fabrication engineers who consider tubing in the production of parts & products which they manufacture. Folder TB-365.
276F Babcock & Wilcox Co.

Tubing, Metal, Flexible.....There are hundreds of applications in the steam and diesel power fields for Penflex Interlocked tubing and Penflexweld High-pressure tubing. Request your copy of "Flexineering."
276G Pa. Flexible Metallic Tubing.

Tubing & Pipe, Stainless Steel.....Has been supplying electric resistance welded stainless steel tubing and pipe to process industries for the past twenty-five years. Complete information available on request.
276H Republic Steel Corp.

Tubing & Pipe, Stainless Steel.....Resistance of 7Mo to stress corrosion cracking, even in presence of chlorides, is coupled with excellent resistance to general corrosion and pitting. Technical Bulletin.
276I Carpenter Steel Co.

Tubing, Stainless Steel.....Offers economical, trouble-free service over long periods of use. New Trentweld price calculator gives full price information and weight per foot of tubing size and grade you need.
276J Trent Tube Co.

Tubing, Stainless Steel.....Furnishes engineering information on construction and types of flexible stainless steel tubing. Also includes data on fittings. Request this completely illustrated Bulletin No. STC-1.
276K American Brass Co.

Tubing Steels.....Technical Data Card presents stress rupture data on 11 tubing steels used in high temperature service. Includes carbon steel, intermediate chrome-molybdenum steels & stainless steels. No. 153-A.
276L Babcock & Wilcox Co.

Tubing Steels, Welding.....Outlines the welding characteristics of both austenitic & ferritic grades of stainless steels & discusses question of proper joint design. Describes various welding methods. TDC 162.
276M Babcock & Wilcox Co.

Tubing, Titanium.....Furnishes information on fabrication of unalloyed titanium tubing. Subjects covered include heat treating, pickling, welding, brazing & machining. Illustrated Bulletin No. 43.
276N Superior Tube Co.

Tubing Troughs.....Describes complete system for permanent & continuous support of instrument tubing. All items & fittings in system are represented by photos & dimensional drawings. 12 p. Bulletin 254.
276O Instrof, Inc.

Unions, Forged Steel.....Describes line of new forged steel unions. Presents complete dimensions of unions in sizes ⅛" to 2" in 3000 lb. class. Also covers outstanding design features. Illustrated Bulletin U-1.
173e *Watson-Stillman Fittings.

Unions, Stainless Steel.....Comprehensive illustrated literature on stainless steel unions specifically designed and constructed for top performance on all metering, measuring and flow control services.
276P Clayton Mark & Co.

Valve Parts..... Threading Stainless Steel—a 4 p. Folder describes specific high production machining operations on stainless steel valve parts. Speeds, cutting angles, coolants and tooling are discussed.
196f *Cooper Alloy Corp.

Valves.....Ultravalve design solves many of the new application problems presented by modern process control. Covers structural features, functional advantages, specifications, etc. in illustrated Bulletin 103-B.
276Q Hammel-Dahl Co.

Valves.....Describes the advantages of heat-holding design of Aloyco jacketed gate, globe, and check valves. Fact-filled Bulletin also includes information concerning specifications, uses, etc. Bulletin No. 3.
276R Alloy Steel Products Co.

Valves.....Flowtrol valves can be used on water, oil, air & many liquids—on pressures ranging from 15 psi to 400 psi. Features, construction, dimensions, specifications, etc., in illustrated Builetin W8-A.
276S Golden Anderson Valve.

Valves.....Describes the wide range of types, sizes, pressures, and alloys available in line of stainless steel valves, with diagrams and dimensions. Includes description of alloys, data on selection, etc. Form 200.
276T Jenkins Bros.

Valves.....Steel dry plug valves that need no lubricant & cast steel gate valves both meet the exacting needs of the petroleum, petro-chemical, & chemical industries. Data in Stockham & Wedgeplug Catalogs.
276U Wedgeplug Valve Co.

Valves.....Furnishes pertinent information on line of cast steel valves . . . for liquefied petroleum gas service. All valves described are disc valves, both single-seated and double seated. Bulletin No. 54-S.
276V Oakadee Co.

Valves.....Describes Aloyco 20 corrosion-resistant valves. Incorporates recent field-test data on Aloyco 20 in various concentrations of sulfuric acid at different temperatures. Illustrated Bulletin No. 8.
276W Alloy Steel Products Co.

→Want more information on any of these items? Just write its code number on one of the postcards inside the back cover, then mail it to us. It's that easy now.

Valves.....Company furnishes "Valve Selection Charts" . . . particularly developed for quickly selecting valve types according to size, temperature, pressure, actuating means and liquid or gas service.
276X Futurecraft Corp.

Valves.....28 p. catalog contains dimensions and illustrations describing latest Rockwell-built valves. Included are non-return (stop-check) valves, globe and angle stop valves, etc. Condensed Catalog No. 105.
276Y Edward Valves.

Valves.....Describes Type 555-RO four-way hydraulic operating valve . . . a unique rotor actuating hydraulic valve with full floating position. Designed for 300-1500 psi pressures. Details in Bulletin No. S-600.
276Z A. W. Cash Co.

Valves.....For heavy duty or special duty, valves give accurate control & long life. Standard line includes: abrasion resistant, gate, motorized gate, cock, quick opening, butterfly, etc. Descriptive Bulletins.
276AA McNally Pittsburgh Mfg.

Valves.....Completely new 64 p. reference describes company valve line-needle, globe, plug, relief, check, etc. Includes construction details, dimensions, specifications, & ordering data. Request Catalog 654.
276BB Republic Mfg. Co.

Valves..... 8 p. Folder gives data needed to enable manufacturer, supply company or sales representative to fit the proper valve for the application. Tells buyer how to get what he needs when ordering a valve.
196e *Cooper Alloy Corp.

Valves.....There's a hard rubber, rubber-lined or plastic-lined valve for every corrosion application. Sizes from 2" to 24". Diaphragm, gate & check types. Chemicals that can be handled in Bulletin No. CE-52.
276CC American Hard Rubber Co.

Valves.....Covers line of tight-closing rubber-seat Butterfly valves. Includes data on advantages, sizes, pressures, velocities, operators, positioners, etc. Photos & details of components. Bulletin No. 650-L1.
276DD Builders-Providence.

Valves.....For corrosive liquor services of the pulp and paper industry. Includes data on the numerous features, general dimensions, a trim and pressure rating chart, etc., in 4 p. illustrated Form 1000.
276EE Ohio Injector Co.

Valves..... Valves to Combat Corrosion . . . literature presents 75 questions and answers selected from Cooper Alloy valve clinics covering materials, operations, service problems, installation and repair.
196q *Cooper Alloy Corp.

Valves.....Covers design, operation & advantages of A-S-H Type C materials handling valves. Employs photos, schematics & line drawings to illustrate valve construction & operation. Data Sheet DVa.
276FF Allen-Sherman-Hoff Co.

Valves.....Company makes available popular entertaining pamphlet, "The Fox & the Hare," presenting a story about the recognition of Balanseal valves. It is humorous & enlightening. Request your free copy.
276GG Farris Engrg. Corp.

Valves.....New Crane corrosion-resistant valves in 18-8 SMo and Craneloy 20—gate, globe, angle and check patterns. Both lines come with screwed or flanged ends. Full information given in Circular AD-2080.
175 Crane Co.

Valves.....Describes the new type "M" valves . . . for the toughest service—for hot, concentrated sulfuric acid and other corrosives too severe for the stainless alloys. Full information in Bulletin V/8.
276HH Duriron Co.

*From advt., this issue

Valves.....Keeping corrosive solutions of mineral & organic acids, alkalies & salts under control is a job for Aloyco Monel or Nickel valves. Both alloys available in wide range of valve designs. Bulletin No. 9.
277A Alloy Steel Products Co.

Valves.....Another famous Hammel-Dahl first—new, patented reversible superstructure. Feature tremendous saving of reversal time (only 7 minutes required) . . . consolidation of spare parts. Bulletin 109-B.
277B Hammel-Dahl Co.

Valves.....A "Technical Tips" booklet describing & illustrating data gathered by the Edward laboratories on valve material, installation, & usage has just been published & is now available. Bulletin 542.
277C Edward Valves.

Valves.....OIC valves for the L-P gas industry provide a safe, absolute seal and extra-long service. Includes features, applications, dimensions, typical installations, etc., in illustrated Form 1002.
277D Ohio Injector Co.

Valves.....Versatile, dependable, economically-priced hand valve . . . for corrosion, abrasion, vacuum or general service—wherever positive action is needed. Details of X-V Series in Bulletin No. FL-154.
277E Farris Flexible Valve Corp.

Valves.....Line of steel valves feature dependable operation and low maintenance cost. Gate, globe and check types handle the most severe high-pressure, high temperature services. Full details in Catalog 20.
277F Chapman Valve Mfg. Co.

Valves, Air Control.....Describes 3 fundamental types of air control valves. Covers primary advantages of air power including speed, cleanliness, economy, resiliency and lightness. Illustrated Bulletin No. 101B.
277G Ross Operating Valve Co.

Valves, Air Release.....Used to vent air from water or gas from any liquid in a pipe line or closed vessel. Includes description & method of operation, applications, types, etc. in Condensed Bulletin 654.
277H V. D. Anderson Co.

Valves, Angle, Seal-Balanced.....Embody all the benefits of Venturiflo design—corrosion-resistant retained seat ring, reduce turbulence, Venturi throat design, large flow capacity, etc. Bulletin 104-B.
277I Hammel-Dahl Co.

Valves, Blast Gates.....Covers low cost, sturdy, manual control valves for air supply to gas or oil burners. Combination iron body & brass gate assures dependable operation . . . prevents "freezing." Bulletin M-100.
277J Eclipse Fuel Engrg. Co.

Valves, Blow-Off.....Drop-tight—rugged and dependable—easy to maintain. Request Blow-Off Valve Check Sheet, new Blow-Off Valve Catalog B-426 (pressures to 400 psi) and Catalog B-434 for higher pressures.
277K Yarnall-Waring Co.

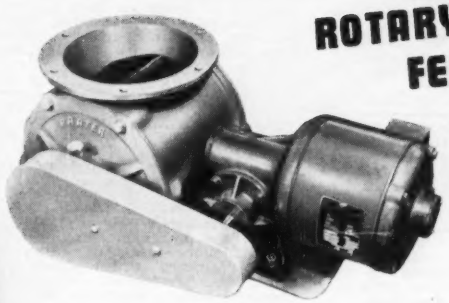
Valves, Bronze.....Seat & disc are super-hard "500 Brinell" stainless steel, formed for tight bottom seating under compression, without tension. No leaks—no wire drawing, galling, steam cutting. Bulletin 260.
277L Manning, Maxwell & Moore.

Valves, Bronze.....Covers OIC 500 line —modern 200 lb. bronze valves. Includes features, service recommendations, working pressures, etc. for globe & angle valves—horizontal & angle checks. Form No. 1001.
277M Ohio Injector Co.

Valves, Butterfly.....Illustrated, 23 p. provides data on line of O-ring butterfly valves. Includes features and advantages, uses and applications, special accessories, dimensions, O-ring information, prices, etc.
277N Mud Products.

to better serve your needs

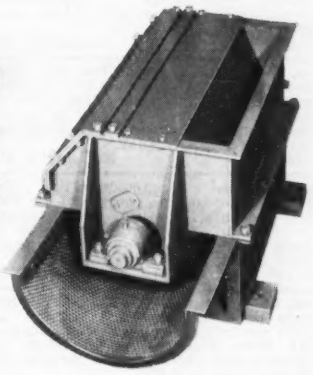
PRATER ROTARY AIRLOCK FEEDERS



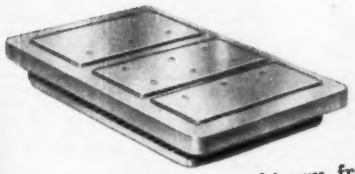
For feeding or unloading Pneumatic conveying systems, sealing off cyclone dust collectors, bag filters or other dust suppression equipment against air leakage. Seven models in three sizes available in cast iron • bronze • cast steel • stainless steel.

PRATER POWER SCREENERS

For smoothing out lumpy chemicals or any other agglomerated materials before mixing, blending or dissolving. Keeps grinding or particle breakage to an absolute minimum.



PRATER PERMANENT MAGNETS



To protect your products and processing machinery from the destructive effects of tramp iron. Readily installed in hoppers, chutes or spouts, Prater magnets reach deep into the flow to weed out nails, nuts, bolts, wire and those small slivers of metal which oftentimes pass on without detection.

Technical literature available on request

PRATER

PRATER PULVERIZER CO.
1536 S. 55th Court, Chicago 51, Ill.

Pipe, Fittings, Valves

Valves, Cast Flanged—Valves, Multi-Port

Valves, Cast Flanged . . . . . Standard Practice SP-42 . . . 8 p. Folder listing detailed specifications for 150# corrosion-resistant cast flanged valves, flanges and flanged fittings. Copies available upon request.
196a *Cooper Alloy Corp.

Valves, Check.....Flanged silent check valves for the control of water hammer. Includes features, technical data & series of dimensional charts for valves of various sizes and pressure ratings. Bulletin WH-654.
278A Williams Gauge Co.

Valves, Check.....Illustrated, 8 p. fully describes line of double cushioned electric check valves. Includes dimensions, cross-sectional views with parts list, suggested wiring diagrams, etc. Bulletin W-10.
278B Golden-Anderson Valve.

Valves, Check.....Low head loss, increased wear resistance and freedom from destructive slamming make line of tilting disc check valves unbeatable for almost every installation. Details in Catalog No. 30.
278C Chapman Valve Mfg. Co.

Valves, Control.....Explains design details and operating characteristics of the complete line of needle type valves. Engineered for applications requiring precise control of low rates of flow. Bulletin 5C-13.
278D Foxboro Co.

Valves, Control.....Describes the "Red Jacket" valve . . . a new type of control valve . . . for handling solids in suspension. Covers principle of operation, construction features & advantages, etc. Illustrated.
278E Red Jacket Co.

Valves, Control, Temperature.....Give you super-sensitive control of air flow for accurate, low cost proportioning or "off-on" control. Adjustable to wide range of open and shut speeds. Full details in Bulletin M-200.
278F Eclipse Fuel Engrg. Co.

Valves, Cylindrical Plug.....Valves feature quick quarter-turn shut-off for safe control, full pipe area for capacity flow, a non-wedging effect for trouble-free performance. Request detailed Catalog 4-CM.
278G ACF Industries.

Valves, Diaphragm.....Greatly reduce replacement and maintenance expenses, especially in lines where corrosion, abrasion, contamination, clogging and leakage can be costly factors. Catalog presents full details.
278H Grinnell Co.

Valves, Diaphragm.....Trouble-free plastic diaphragm valves—choice of general-purpose Ace-Ite, Ace Parian (polyethylene) or Ace Saran. Handles most corrosive chemicals & food ingredients. Bulletin 351.
278I American Hard Rubber Co.

Valves, Diaphragm Control.....Throughout the entire range of valve travel—positioning is accurate & undistorted—control increments are finer with minimized positioning error. Full details in Bulletin CV-53.
278J Kieley & Mueller.

Valves, Diaphragm, Packless.....Eliminate stem leakage and maintenance on air, vacuum, gas, light oil and similar services. Available in wide selection of materials and sizes. Request Folder No. AD-1942.
278K Crane Co.

Valves, Discharge.....Data on completely new stainless steel discharge valve for use on all types of truck tanks. Tells how you can save many hours by speeding up unloading of bulk liquids. Fully illustrated, 6 p.
278L Chem-Valve Corp.

Valves, Engine-Stop.....Prevent flywheel explosion . . . with G-A automatic engine-stop valves. Automatically close when turbines, compressors or engines overspeed. Request detailed Bulletin No. S-3.
278M Golden-Anderson Valve.

Valves & Fittings.....Makes available a preprint of technical data section of forthcoming Valve & Fitting Catalog. Includes diagrams, design information, cutaway photos, selection, maintenance & repair hints, etc.
278N Cooper Alloy Corp.

Valves & Fittings.....Descriptive reference, "Valves and Fittings for Ammonia and Freon-12," provides sizes, symbol numbers, dimensions and weights of valves, fittings and accessories. Request Catalog "O."
278O Frick Co.

Valves & Fittings, Polyvinyl Chloride.....Line designed & engineered by Lunkenheimer—patented & registered under "Luncor," which refers to its remarkable resistance to corrosive chemical action. Complete data.
278P Lunkenheimer Co.

Valves, Float.....Covers line of float valves for more efficient liquid level and flow control. Simple in construction, rugged in service, accurate in operation, require less maintenance. Bulletin No. 101-B.
278Q Davis Regulator Co.

Valves, Fog & Deluge.....Information & specifications on new line of fog & deluge valves. Includes data on the types, operation, ratings, materials of construction, installation, etc. Illustrated Forms 115, 116, 117.
278R McRae Corp.

Valves, Gas.....Motorized gas valves combine high capacity and soft seat positive shut-off in sturdy light weight aluminum bodies. For use with all commercial fuel gases. Provides full data on line. Bulletin M-600.
278S Eclipse Fuel Engrg. Co.

Valves, Gate.....Exclusive precision-machined guides eliminate chatter . . . lengthen service life in company line of iron body gate valves. Provides complete information concerning valves in Circular 564.
278T Lukenheimer Co.

Valves, Gate.....Describes major stainless steel gate valves in company's line. Includes schematic drawings; section on design factors; discussion of construction materials, standards; etc. Bulletin 55G.
278U Cooper Alloy Corp.

Valves, Gate.....Offers data on sturdy, small forged steel gate valves. Superhardened gate and seats assure tight closure, smooth operation and low maintenance. Complete information in Catalog No. 10.
278V Chapman Valve Mfg. Co.

Valves, Gate.....Made in wide range of sizes, types & constructions, including solid & slotted taper-seat wedge types for all kinds of normal & corrosive services in pressures up to 1500 lbs. Request Bulletin.
278W Darling Valve & Mfg. Co.

Valves, Gate, Bronze.....Announces release of a new descriptive Folder describing 40 patterns in complete line of bronze Gates. You will find the valve you need, with details of design and construction.
278X Jenkins Bros.

Valves, Gate & Globe . . . . . Design Factors of Stainless Steel Valves . . . offers a 4 p. Technical Folder explaining basic design factors which a good stainless steel gate or globe valve should incorporate.
196J *Cooper Alloy Corp.

Valves, Globe & Angle.....Describes "500 Brinell" bronze globe & angle valves. Seats & discs of cutlery grade, true "500 Brinell" stainless steel, precision machined on specially designed equipment. Bulletin 116.
278Y Kennedy Valve Mfg. Co.

Valves, Globe & Check.....Design & construction of valves dictated solely by requirements for the handling of chemicals. Ruggedness, quality & low maintenance costs featured. Illustrated Bulletins Nos. H-1 & H-2.
278Z La Bour Co.

Valves, Grooved End.....Comprehensive, completely illustrated Circular describes line of iron body bronze mounted grooved end valves for grooved end couplings. Includes features, dimensions & prices.
278AA Lukenheimer Co.

Valves, Instrument.....Describes the 6000# Hancock stainless steel instrument valve . . . a new high pressure valve for use on instrument panels, instrument lines, gauge lines, by-pass lines, etc. Bulletin 230.
278BB Manning, Maxwell & Moore.

Valves, Jacketed . . . . . Benefit from the heat-holding design of Aloyco jacketed gate, globe and check valves. Fact-filled reference lists specifications and uses of jacketed valves. Request Bulletin No. 3.
177 *Alloy Steel Products Co.

Valves, Line Blind.....Visible shut-off line blind valves offer many features: unsurpassed for positive action; easy operation; long-life service; lasting safety; etc. Details furnished in descriptive Catalog.
278CC Hamer Valves.

Valves, Lubricated Plug.....ACF cylindrical lubricated plug valves—with rectangular or round port openings—feature "split-second" shut off, teflon head gasket & many other design advantages. Catalog 7-CM.
278DD ACF Industries.

Valves, Lubricated Plug.....24 p. shows valves in full-port & venturi types, sizes up to 14", & with a choice of self-sealed 2-piece plug or 1-piece plug designs. Complete engineering data. Reference Book No. 39-5.
278EE Homestead Valve Mfg. Co.

Valves, Lubricated Plug.....Gland liner . . . versatile component of newly designed OIC line . . . seals, reduces friction, helps extend packing life. Full data on lubricated plug valve design in Bulletin 1003.
278FF Ohio Injector Co.

Valves, Lubricated Plug.....Cover variety of services for gasoline, oil, water, air, gas, acids, chemicals, etc. Includes characteristics of design, special features & types, in 44 p. illustrated Catalog No. 5.
278GG ACF Industries.

Valves, Lubricated Plug.....Powell Valves—the complete quality line—offer many outstanding features in new lubricated plug valves, such as quick & sure operation & a positive seal when valve is closed. Full data.
278HH Wm. Powell Co.

Valves, Mud.....Describes Mudwonder alloy steel valves—designed primarily for mudline service in the oil drilling industry but also suitable for other abrasive fluid applications. Illustrated Catalog No. 12-S.
278II Edward Valves.

Valves, Multi-Port.....Provides valuable information on rubber seated multi-port valves . . . for water softeners, pressure filters and ion exchangers. Available in ⅜ to 4-inch sizes. Request detailed Catalogs.
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280A Jenkins Bros.

Valves, Packless.....For use wherever pipelines carrying gasoline, oil or other volatile liquids & vapors must have positive protection against leakage For complete information request Bulletin No. EC-813.
280B Fulton Sylphon Div.

Valves, Pinch-Type.....No other valve controls flow of hard-to-handle corrosive & abrasive materials with efficiency & reliability of pinch-type valve . . . because Flex-Valve cannot plug. Catalog No. FL-382.
280C Farris Flexible Valve Corp.

Valves, Plastic.....Plastic valves of unplasticized polyvinyl chloride described in a new Bulletin featuring both needle and globe valves. Needle valves range in size from ⅛"-¾"—globe valves from 1"-2".
280D Industrial Plastic Fab.

Valve, Plug.....Regrind-renew plug type valves with 500 Brinell armor seat—armored against valve-killing close control of steam . . . and abrasion. For complete information on company line, request Form No. 202.
280E Jenkins Bros.

Valves, Plug.....Company's line of nonlubricated steel plug valves features dependable performance at a wide range of temperatures and pressures. For complete details, request informative Wedgeplug Catalog 54-1-W.
280F Wedgeplug Valve Co.

Valves, Porcelain.....Company makes available detailed literature covering the features and advantages of porcelain valves. Bulletin includes complete description, characteristics and specifications.
280G Lapp Insulator Co.

Valves, Pressure Reducing.....Presents a completely illustrated Bulletin covering the company line of pressure reducing valves. Includes engineering, operating and maintenance data in 20 p. reference. No. 461-B.
280H Leslie Co.

Valves, Pressure Reducing.....Automatically maintain a constant reduced pressure of steam, air or gas. Single seated, tight closing. Respond instantly to load changes. Complete information in Bulletin 5302.
280I Leslie Co.

Valves, Pump.....Keep pumps fit—with valves that fit all pumps. Durabla pump valves will operate freely under extremes of high or low temperature, with highly corrosive fluids & in any position. Request Bulletin.
280J Durabla Mfg. Co.

Valves, Reducing.....New line of reducing valves . . . help solve small flow control problems. Includes information covering numerous features, capacities, specifications, applications, etc. Bulletin No. 511-A.
280K Leslie Co.

Valves, Relief.....Includes dimensions and design details for company line of forged steel strainers and relief valves, plus tips on the installation and maintenance of these products, in illustrated Catalog No. 12-T.
280L Edward Valves.

Valves, Relief.....Bulletins cover new Type FR back pressure relief valves available in pipe sizes from ½" to 2" in iron, bronze, stainless steel or monel bodies. Suitable for pressures up to 400 psi. Illustrated.
280M A. W. Cash Valve Mfg. Corp.

Valves, Relief, Multiport.....For automatic regulated relief of overpressure steam, air, or gas to atmosphere. Provide safe, continuous operation on toughest jobs. Sizes 4" to 48". Details in Publication No. 5200.
280N Cochrane Corp.

Valves, Safety.....New Frick Type AF safety valves tested for capacity & approved for use with various refrigerants by the National Board of Boiler & Pressure Vessel Inspectors. Details in Bulletin 194-A.
280O Frick Co.

Valves, Safety.....Fully illustrated, 16 p. furnishes detailed information on Crosby line of high capacity safety valves. Describes operating features, sizes, pressure-temperature limits, etc. Catalog No. 400-HC.
280P Crosby Steam Gauge & Valve.

Valves, Safety Relief.....Liberally illustrated, 132 p. describes line of safety relief valves . . . standard valves & balanced bellows valves . . . for process industries & general industry service. Catalog 1900.
280Q Manning, Maxwell & Moore.

Valves, Safety Relief.....The ultimate in nozzle valve construction with complete standardization and interchangeability in every part. Offers Catalog 48Ra covering product line and Technical Manual 51B.
280R Farris Engrg. Corp.

Valves, Safety Shut-Off.....Operate instantly . . . must be reset manually . . . protect you fully against gas, air, or electrical failures. Choice of 5 power units for variety of control combinations. Bulletin M-302.
280S Eclipse Fuel Engrg. Co.

Valves, Safety Shutoff.....Combination gas shutoff valves provide valuable features: mount in any position; positive shutoff; foolproof design; vibration-proof; explosion-proof; rapid action; etc. Form 200.
280T Valco. Inc.

Valves, Sanitary & Industrial.....Fabricated. quick-acting, seatless valve combines ruggedness of globe valve, cleanliness of plug valve & flow characteristics of gate valve. Describes features in illustrated, 4 p.
280U Hurt Corp.

Valves, Shut-Off.....Pertinent information offered for shut-off valves which are actuated by either: excess flow; solenoid; heat, of any predetermined degree; shock. Includes operation, uses, ratings, etc.
280V McRae Corp.

Valves, Solenoid.....Illustrates and describes the new direct lift solenoid valves made in brass (Type F) and stainless steel (Type G)—⅛" and ¼" pipe sizes, with ports from 1/16" to ¼". Bulletin No. F-1.
280W J. D. Gould Co.

Valves, Solenoid.....For high pressure applications. Illustrates features of bronze or stainless steel pilot operated & direct lift solenoid valves with diagrams of electrical circuits. Details in Bulletin No. HP201.
280X Atkomatic Valve Co.

Valves, Solenoid.....Announces new compact two-way solenoid valves . . . for controlling the flow of air, gas, water, light oil, and other noncorrosive fluids. Features, applications, dimensions, etc. Form No. 708.
280Y Automatic Switch Co.

Valves, Solenoid.....Minimum of moving parts, simplicity of operation, assures trouble-free operation . . . high operating efficiency . . . maximum shutoff protection. Provides complete information in Bulletin M-500.
280Z Eclipse Fuel Engrg. Co.

Valves, Solenoid.....Manual contains important general information such as detailed description & illustration of Shear-Seal principle & its application in manual & solenoid valves. Data in 34 p. Catalog No. 4G.
280AA Barksdale Valves.

Valves, Solenoid.....A new automatic valve to solve your tank or drum filling problems . . . the Davis No. 97th solenoid valve saves time—avoids waste—promotes safety. Provides descriptive literature.
280BB Davis Regulator Co.

Valves, Solenoid.....Describes & illustrates additions to line of general service solenoid valves. Features include cast bronze construction, piston-pilot operation, full ports, etc. Illustrated Bulletin A-3.
280CC J. D. Gould Co.

Valves, Solenoid.....Packless—piston-pilot operated—globe bodies—union bonnet—certified alloy castings—screwed or socket weld ends—full ports to 1000 psi. Complete details on product line in Bulletin K.
280DD J. D. Gould Co.

Valves, Solenoid.....Fully diagrammed, 8 p. details line of cushioned solenoid operated valves. Includes construction, operation, installation, servicing, dimensions, specifications, parts list, etc. Bulletin W-7.
280EE Golden Anderson Valve.

Valves, Solenoid.....Solenoid valves of stainless steel for extremely high pressures offered in ½", ¾" & 1¼" pipe sizes. ½" & ¾" are rated to 2500 psi & 1½" to 3000 psi. Details in illustrated Bulletin No. 105.
280FF Atkomatic Valve Co.

Valves, Solenoid.....Announces a line of cylinder operated solenoid pilot controlled valves for handling corrosive gases and liquids. Body material can be selected for particular fluid. Bulletin No. 8338.
280GG Automatic Switch Co.

Valves, Stainless Steel..... Flow Diagrams . . . valuable Folder describes basic stainless steel valve designs in terms of fluid flow. The uses and limitations of each major type are discussed. 4 p.
196b *Cooper Alloy Corp.

Valves, Stainless Steel..... Announces availability of a 68 p. simplified stainless steel valve catalog which includes engineering drawings, wts., size ranges, dimensions & basic material data. Catalog No. 55D.
196h *Cooper Alloy Corp.

Valves, Stainless Steel..... Valve Technical Data . . . announces the release of a 12 p. Technical Manual which furnishes design, selection, maintenance and repair information for stainless steel valves.
196k *Cooper Alloy Corp.

Valves, Stainless Steel..... Figure Number Cross Reference Chart . . . supplies descriptive literature—a 4 p. Folder which shows equivalent figure numbers of the five leading stainless steel valve producers.
196l *Cooper Alloy Corp.

Valves, Stainless Steel..... Getting the Most Out of Your Valves . . . provides a detailed 4 p. technical discussion explaining selection, installation, inspection and maintenance of stainless steel valves.
196m *Cooper Alloy Corp.

Valves, Stainless Steel..... 8 p. Technical Article covers alloys, valve selection, design factors, installation, maintenance, operation and inspection of valves and fittings used by the paper industry.
196p *Cooper Alloy Corp.

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Valves, Thermostat.....New tank thermostat valves designed for dependable, low-cost temperature control on small storage tanks, kettles, bottle & can washers, industrial washing machines, driers, vulcanizers, etc.
281A Klipfel Valves.

Valves, Water-Steam Mixing.....Cannot discharge live steam should water pressure fail. Ideal for processing, washing and other applications. Describes operational features in illustrated, 4 p. Bulletin.
281B Hammel-Dahl Co.

Process Equipment

Absorbers.....For absorption of hydrogen chloride and other gases. Produce as much as 20 tons per day 22° Baume acid. Pneumatic automatic control. Complete information offered in Catalog No. S-7460.
281C National Carbon Co.

Absorbers.....Falling film absorbers are furnished in sizes from 12 to 241 tubes & produce cool acid in one pass, take high-temperature feed gas & feature minimum pressure drop. Request descriptive Catalog.
295e *Falls Industries.

Agitating Equipment.....Fully illustrated, 50 p. covers: Model WT Agitator Drive; Model T & TA Agitator Drives; Model TB & TAB Agitator Drives; Model No. 3 Agitator Drive; Flomix; etc. Request Catalog No. 530.
281D New England Tank & Tower.

Agitators.....Especially designed to prevent short circuiting and to create maximum, air-bubble dispersion. Center or side airlift types generally used in cyanide work. For full details, refer to Bulletin A2-B4.
281E Denver Equipment Co.

Airtube Systems.....Describes the newly developed "packaged" Lamson Airtube System . . . for fast, efficient pneumatic tube connection of any 2 points up to 130 feet apart, in 4 p. fully illustrated Bulletin.
281F Lamson Corp.

Autoclave-Reactors.....Company provides engineering knowledge, fabricating skill, facilities . . . for greater reliability. In any capacity, for any pressure, temperature or reaction. Full details in Catalog 2413.
281G Blaw-Knox Co.

Autoclaves, High Pressure.....Ideally suited for many "small batch" laboratory research problems in high pressure investigations. Covers features, applications, sizes, etc. in illustrated Bulletin No. 1051-A.
281H Autoclave Engrs.

Blast Cleaning.....Describes Utility Vacu-Blaster . . . the new machine for blast cleaning—efficient, dust-free, uniform, economical. Specifications and operating advantages in illustrated Bulletin No. B-1.
281I Vacu-Blast Co.

Blenders.....Day blenders are available in capacities from one cubic foot to 2300 cubic feet. Plain, galvanized or stainless steel tanks. Jacketing is optional. For complete details, request illustrated Bulletin 800.
281J J. H. Day Co.

Blenders, Dry Batch.....Company's line of dry batch blenders . . . are the answer to fast, economical mixing. For complete information about the numerous features and advantages, request illustrated Bulletin.
281K Sturtevant Mill Co.

Blenders, Rotary Batch.....Offers complete information on special self-cleaning batch blenders or mixers. Includes data on operation, construction, approximate specifications, etc. Illustrated Bulletin No. 080B.
281L Sturtevant Mill Co.

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Blenders, Twin Shell—Crushers, Jaw

Blenders, Twin Shell.....In plant after plant . . . the Patterson-Kelley twin shell blender does the job better, faster, and lasts longer. For complete information on product line request descriptive Catalogs 12 & 13.
282A Patterson-Kelley Co.

Blending Systems.....Pictures and describes the company's new high-ratio continuous blending system. Lists features, outlines the operating sequence, and contains schematic diagram. Technical Reference No. 54D.
282B Richardson Scale Co.

Caps, Bubble.....Offers extensive compilation of engineering and construction data. Contains complete specification information for more than 200 standard styles of bubble caps and risers. Bulletin No. 21.
282O Pressed Steel Co.

Centrifugals, Automatic Recycling..... Roberts G-8 automatic recycling centrifugal provides large capacity—48" x 30" x 7" basket has a volumetric capacity of 15.7 cu. ft. Full details in Bulletin No. 5426.2.
282D Western States Mach. Co.

Centrifugals, Center-Slung..... When your process calls for liquid-solids separation by centrifugal force . . . you can do it more economically with the new Tolhurst Center-Slung centrifugal. Descriptive Catalog.
282E American Mach. & Metals.

Centrifugals, Continuous.....Illustrated Bulletin describes application of continuous centrifugal filters, listing 75 materials on which they are successfully used, with specific examples of performance.
282F Bird Mach. Co.

Centrifugals, Suspended.....Presents detailed information upon request covering company line of Suspended Centrifugals with Gyro-Balanced suspension head, & optional unloading & time control equipment.
282G Bird Mach. Co.

Centrifuges.....One of the numerous outstanding advantages offered by every Reineveld centrifuge is its deeper bowl . . . which leads to greater filtering area & increased production. Request Booklet 5-RC-3.
282H Heyl & Patterson.

Centrifuges.....Descriptive information on the De Laval Gyro-Tester . . . for laboratory and pilot plant. Combines high speed test tube centrifuge and continuous, constant efficiency centrifuge. Illustrated.
282I De Laval Separator Co.

Centrifuges.....Many conventional separating & clarifying problems are improved vastly & many difficult problems are now being solved economically thru widespread use of Super centrifuges. Bulletin 1248.
282J Sharples Corp.

Centrifuges.....There are extra profits from slurries when high-centrifugal-force Super-D-Canter, with its internal screw conveyor action, separates solids from liquids. Find details in Bulletin No. 1254.
282K Sharples Corp.

Centrifuges.....High speed dehydrating centrifuge offers precise external control of variations in flow rate, crystal size & slurry concentration & permits intermediate treatment of crystals. Bulletin No. 1257.
282L Sharples Corp.

Centrifuges.....Provides industry with 7 types of continuous centrifuges to handle materials ranging from 2 immiscible liquids to crystalline solids. Briefly & graphically describes full line in Bulletin 1259.
282M Sharples Corp.

Centrifuges.....For toughest concentrating & separating jobs. Sharples DH-3 is built for those many applications requiring higher than normal throughput capacity & heavy duty performance. Request Bulletin 1279.
282N Sharples Corp.

Centrifuges, Nozzle.....Information covers the numerous advantages and performance of the Sharples DV-2—the nozzle centrifuge with positive, externally controlled solids discharge valves. Data in Bulletin 1243.
282O Sharples Corp.

Chasers.....Chasers (edgerunners, mixers, mullers, etc.) are extremely sturdy in design, and improvements over a period of years have resulted in a minimum of maintenance. Information in detailed Bulletin.
282P Vulcan Iron Wks.

Classifiers.....Covers physical characteristics, automatic control mechanism, theory, method of operation, applications, and advantages of new hindered settling hydraulic classifiers. Illustrated Bulletin No. 2342.
282Q Dorr-Oliver.

Classifiers.....All classifiers (Rake Type, Spiral, Hydro) are designed to efficiently separate fine particles in specific applications. For complete information on company's line, request Bulletin C5C-B.
282R Denver Equipment Co.

Classifiers, Air.....New Gyrotor air classifier is a separator designed for close control of products. Has a wide range of fineness, controlled by simply changing the rotor speed. Data in Bulletin AH-449-11.
282S Hardinge Co.

Classifiers, Continuous Centrifugal..... Company makes available descriptive literature on continuous centrifugal classifiers ... what they do, how they work, with examples and pictures of successful applications.
282T Bird Mach. Co.

Cleaners, Air.....Illustrated, 8 p. covers line of electronic air cleaners. Includes principle of operation, methods of testing air filter efficiency, general construction features, etc. AIA File No. 30-D-3.
282U Electro-air Cleaner Co.

Cleaners, Air, Oil Bath.....Announces a new low resistance type Cycoil oil bath air cleaner for engines using turbo-chargers or pressure blowers for scavenging. Offers complete information in Bulletin 160-A.
282V American Air Filter Co.

Cleaners, Blast.....New, low-cost blast cleaner features completely dust-free cleaning in a wide range of applications. Includes information on numerous uses, operating advantages, special design features, etc.
282W Vacu-Blast Co.

Cleaning Accessories, Blast.....Informative and illustrated Bulletin fully describes accessories and supplies for blast cleaning. Covers nozzles, helmets, hose, gloves, sleeves, aprons, leggings, etc. No. 300C.
282X Pangborn Corp.

Cleaning, Blast, Airless.....20 p. Bulletin describes the RF Rotoblast, shows its applications in various types of equipment, lists typical products cleaned & various finishes that can be secured. No. 214.
282Y Pangborn Corp.

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Cloth, Filter.....Information on CPS, the "controlled-pore size" filter cloth of teflon for corrosive liquid and gas filtration compiled in a new reference. Request copy of CPS Teflon Cloth Bulletin T-112.
282Z Porous Plastic Filter Co.

Cloth, Filter.....“Facts & Figures About Filter Cloth” contains actual samples & performance characteristics on Stanley corrosion-resistant filter cloths. Also folder on centrifugal bags & filters.
282AA W. W. Stanley Co.

Collectors, Multi-Wash.....For the efficient removal of air-borne contamination (dust, fumes, vapors, acid gases and odors) and recovery of product thru multiple washing action. Bulletins Nos. 551 & 610.
282BB Claude B. Schneible Co.

Columns, Fractionating.....Offer unusual advantages in solving fractionating & absorption problems. No corrosion, no contamination. In 4" & 6" sizes with any number of plates. Full details covered in Data Sheet.
282CC Corning Glass Wks.

Columns, Glassed Steel.....For extra corrosion-resistance . . . for process flexibility. Rated for full vacuum and internal pressure starting at 25 psig. Furnishes complete information in Bulletin No. 907.
141e *Pfauder Co.

Combustion Chambers, Graphite..... Covers graphite combustion chambers & impervious graphite burner nozzles . . . for production of hydrogen chloride. Description & outstanding features in Catalog No. S-7530.
282DD National Carbon Co.

Concentrators.....For the toughest concentrating and separating jobs. High capacity, heavy duty Nozijector is capable of handling loads up to 40 hp input without power loss or motor strain. Bulletin No. 1276.
282EE Sharples Corp.

Converters, Dry Ice.....Dry ice converters are A.S.M.E. code pressure vessels especially adapted to charging with full 50-pound cakes of solid CO_2. Feature no operating costs. Folder offers complete details.
282FF Dry Ice Converter Corp.

Crushers.....Supreme standard machines for any material from soft wax and hard resins to sponge-iron. Machines take 16 inch chunks and deliver ½ inch size. Prices and free test run service included in Bulletin.
282GG Franklin P. Miller & Son.

Crushers.....S-A Knittel ring-type crushers reduce mine-run coal to stoker size in one operation. Double-rotor unit handles wet coal without clogging . . . maintains full rated capacity. Offers Bulletin 12-C.
282HH Stephens-Adamson Mfg. Co.

Crushers, Double Roll.....McLanahan Black Diamond double roll crusher for low-cost crushing of chemicals . . . lime . . . cinders . . . and other similar materials. Full details in Bulletin No. BDDR-255.
282II McLanahan Stone Corp.

Crushers, Jaw.....Issues an illustrated booklet describing company line of jaw crushers built in many sizes & types for various requirements. Specifications & approximate capacities, hp & weights. Bulletin No. 062.
282JJ Sturtevant Mill Co.

Crushers, Jaw.....Cast steel frame, manganese jaw & cheek plates. Large diameter shafts reduce shaft deflection & thus increase life of heavy-duty, oversize roller bearings in bumper. Bulletin No. C12-B12.
282KK Denver Equipment Co.

Crushers, Jaw.....Illustrated, 24 p. booklet offers complete information on company's line of jaw crushers. Built in eight sizes with capacities up to 300 tons per hour. Details available in Bulletin No. 1124.
76e *Traylor Engrg. & Mfg. Co.

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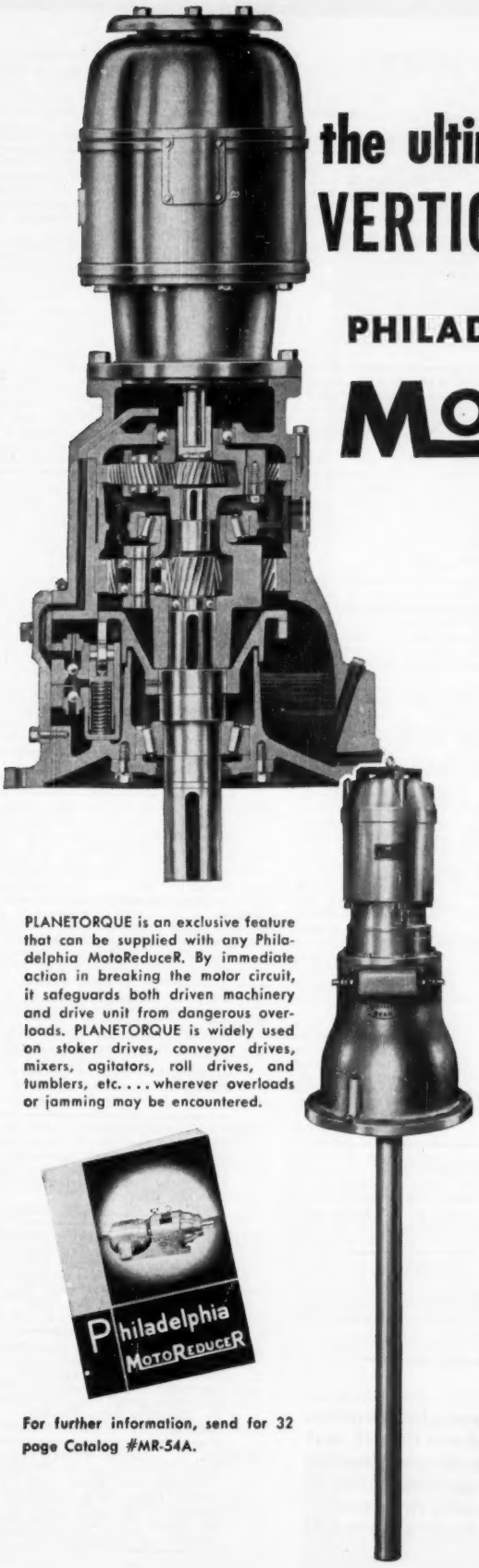

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Process Equipment

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Crushers, Mud Hog.....Traveling breaker plate non-plug crushers for reducing all types of wet, sticky materials. Covers general specifications, sizes, capacities, horsepower and weights, in illustrated Bulletin 864.
284A Jeffrey Mfg. Co.

Crushers, Rotary.....Rotary fine crushers are unique in that they crush or granulate to fine even sizes without producing a large amount of "fines" or dust. Includes data on operation & specifications. Bulletin 063.
284B Sturtevant Mill Co.

Crystallizers, Vacuum.....8 p. booklet describes Swenson crystallizers—individually engineered for minimum cost, maximum recovery of crystals, top quality of product. Request illustrated Bulletin No. C-100.
284C Swenson Evaporator Co.

Cyclones.....Valuable data on "hydraul" centrifuge" . . . used to thicken or classify slurry solids. Describes what it is, how developed and made, and how it works. Complete details in fully illustrated, 20 p.
284D Heyl & Patterson.

Cyclones.....12 p. Catalog illustrates 4 basic model cyclones and completely describes new features of moulded pure gum replaceable lining and integral 2-stage cylindrical design. Find information in Bulletin No. 121.
284E Equipment Engrs.

Deaerators.....Tray type—prevents corrosion in piping, economizers, boilers & exchangers by removing dissolved oxygen & other non-condensible gases. For complete details, request Publication No. 3005.
284F Cochrane Corp.

Deaerators.....Modern design, a simplified principle & advanced engineering now bring effective deaeration at a budget price. Describes advantages, operation, capacities, applications, etc. Bulletin No. 1500.
284G Fred H. Schaub Engrg. Co.

Deaerators.....Atomizing tray—recommended for heating & deaerating waters when operating under constant pressure application & where atomizing type is not thermally disadvantageous. Publication No. 4635.
284H Cochrane Corp.

Deaerators, Reboiling.....Outlines the numerous advantages of the reboiling deaerator with direct contact internal vent condenser, which heats and deaerates water in three stages. 4 p. illustrated Bulletin No. 3677.
284I Permutit Corp.

Deaerators, Steam-Jet.....Covers full-contact steam-jet deaerators—design improvement, ranges of application, performance characteristics, principles of operation & construction. Bulletin No. W-210-B-32.
284J Worthington Corp.

Dealkalizing Salt Splitters.....Manufacturer of water conditioning equipment makes available a new reference—covers details of operation in addition to the numerous advantages. Publication No. 4567.
65 *Cochrane Corp.

Demineralizers.....Available in two-bed, three-bed, four-bed and mixed bed units, of manual and automatic designs, and for any capacity. Complete information in Publication 5800, Handbook on Demineralization.
284K Cochrane Corp.

Demineralizers.....Valuable data on advantages & types of demineralizers, applications of demineralizing, principles of demineralization, ion exchange resins, etc., in completely illustrated Bulletin WC-111.
284L Graver Water Conditioning.

*From advt., this issue

Demineralizers.....Water demineralizers are backed by more than 75 years of water purification experience & are made in sizes & models for every pure water need. Describes complete line in detailed Catalog 127.
284M Barnstead Still & Sterilizing.

Demineralizers.....Describes entire line of water conditioning equipment and specialties. Covers demineralizers, hot process, hot lime zeolite, zeolite softeners, reactors, deaerators, filters, etc. Bulletin No. 6210.
284N Cochrane Corp.

Demineralizers, Permanent Cartridge..... Low cost, mineral-free water in quantities up to 10 gals./hr. Operation is simple & foolproof & maintenance is low. Flow meter offers valuable advantages. Illustrated, 6 p.
284O Penfield Mfg. Co.

Demineralizers, Water, Pressure Bantam .....Deliver demineralized water under pressure so that it can be piped to any desired point where mineral-free water is actually used. Details in new Bulletin No. 128.
284P Barnstead Still & Sterilizer.

DeMisters..... Bulletin describes the clean separation between liquid and vapor in all types of process vessels by means of Yorkmesh DeMisters. Covers construction, types, applications, engineering data, etc.
335a *Otto H. York Co.

DeMisters..... "Performance of Wire Mesh DeMisters" presents case histories which show how wire mesh demisters are being used to eliminate overhead losses and increase the quality of the overhead product.
335e *Otto H. York Co.

Demisters..... Covers construction, types & applications of wire mesh demisters used to insure clean separation between liquids & vapors in vacuum towers, scrubbers, evaporators, gas absorbers, etc. Bulletin 16.
335d *Otto H. York Co.

DeMisters..... Company announces the availability of a case study showing how installation of a wire mesh demister pad in a vacuum tower resulted in 90% reduction in catalyst poisoning. Case Study 1002.
335f *Otto H. York Co.

DeMisters..... Valuable case study, "Yorkmesh DeMister Eliminates Caustic Spray," contains reproductions of initial correspondence, recommendations, order and service history. Request Case Study 1003.
335g *Otto H. York Co.

DeMisters..... Case Study shows how the installation of stainless steel wire mesh sections in two vacuum asphalt towers increase feed capacity 30-35% while maintaining gas-oil quality. Request Case Study 1004.
335h *Otto H. York Co.

DeMisters..... Tells how a monel wire mesh demister was installed in a compressor suction drum of a deasphalting unit to reduce high maintenance costs on propane compressors. Case Studies 1005 & 1006.
335i *Otto H. York Co.

Den & Excavator.....Unit forms inexpensive, complete, efficient means for producing a superior, bulky, yet granular, superphosphate in excellent mechanical condition for use as a fertilizer. Bulletin No. 089.
284Q Sturtevant Mill Co.

→Want more information on any of these items? Just write its code number on one of the postcards inside the back cover, then mail it to us. It's that easy now.

Discs & Cylinders.....Illustrated booklet covers features and advantages of Carter discs and Hart Uni-Flow cylinders . . . for length separation and sizing of grain, seed, and other granular materials.
284R Hart-Carter Co.

Discs, Frangible.....Individually-designed pressure relieving devices used to protect equipment or process systems wherever over-pressure is a problem. Illustrated Catalog Sheets cover variety of uses.
284S Frangible Discs.

Discs, Rupture.....For low pressure and highly corrosive applications. Offers complete details on construction, operation, pressure ranges, manufacturing tolerance, choice of materials, etc. Catalog No. 77-30.
284T Black, Sivalls & Bryson.

Discs, Rupture..... Impervite rupture discs feature practically 100% breakout of pressure membrance to allow maximum full opening for safe escape of excess pressure. Data Sheet now available on request.
295a *Falls Industries.

Dissociators, Ammonia.....Illustrated, 12 p. offers valuable information; typical uses of dissociated ammonia; description of dissociator; economy; advantages; sizes-capacities; users of equipment; etc. Bulletin B-52.
284U Drever Co.

Dryer-Blenders..... For drying corrosive products . . . the Pfaudler glassed steel conical dryer-blender is extremely fast, and highly corrosion resistant. For details, request illustrated product literature.
141b *Pfaudler Co.

Dryers.....Help solve problems of drying air or other gases. Offer valuable advantages: simplicity of operation & maintenance; low installation cost & minimum maintenance expense. Details in Bulletin D-29.
284V C. M. Kemp Mfg. Co.

Dryers.....Announces the availability of an industrial film, sound and color, for showing to groups of chemical engineers, chemists, and students. Shows principle and application of Turbo-Dryer. Fifteen minutes.
284W Wyssmont Co.

Dryers..... Chemicals are dried quickly, economically . . . in a Renneburg dryer. Descrintive product literature includes information on company's conventional dryers, vacuum batch dryers, etc.
308a *Edw. Renneburg & Sons Co.

Dryers.....Relatively high capacity, compact rotating drum dryer of advanced design now produced for drying or heating granular crystalline materials in steel & by-products processing industries. Bulletin 181.
284X Roberts & Schaefer Co.

Dryers.....Designed to dry air to sub-zero dew points at low cost. Available with manual, semi-automatic, or fully automatic tower reactivation. Complete facts and technical information in Bulletin D-27.
284Y C. M. Kemp Mfg. Co.

Dryers.....20 p. catalog reviews the entire line of chemical processing, food processing, fertilizer and fish reduction equipment. Introduces and features the DehydrO-Mat. Request illustrated Bulletin No. 854.
284Z . Edw. Renneburg & Sons Co.

Dryers.....Available in several types: direct heat, indirect heat, and steam tube. Let Deco engineers help solve your drying problem—no dryer problem too small or too large. Details in Bulletin No. D4-B2.
284AA Denver Equipment Co.

Dryers.....Lectro-dryers can dry air & gases in volume to dewpoints below —100°F—can drop relative humidity lower than 10%. Booklet describes machines & how various industries use them to gain efficiency.
284BB Pittsburgh Lectrodryer Corp.

Dryers, Rotary.....Deliver top production, exacting performance, greater profits. Tells how Standard-Hersey has aided manufacturers throughout the world in solving their dryer problems, in illustrated, 12 p.
285A Standard Steel Corp.

Dryers, Rotary.....Vulcan rotary dryers designed & constructed to give maximum performance with a minimum of maintenance. Describes rotary kilns, coolers, dryers, retorts, etc., in illustrated Bulletin A-442.
285B Vulcan Iron Wks.

Dryers, Rotary.....Dry without contamination from combustion gases, regardless of fuel. For complete information on the numerous advantages of Ruggles-Coles indirect-fired dryers, request Bulletin AH-438-11.
285C Hardinge Co.

Dryers, Rotary . . . . . The Davenport rotary hot air dryer is of stainless steel construction. Dryer is installed in one of the large processing plants, drying wheat gluten. For complete details, request Catalog A.
285D Davenport Mach. & Foundry.

Dryers, Rotary, Vacuum.....Buflovak vacuum rotary dryers provide low temperature drying with agitation... and recovery of solvents. For complete data on company's line request illustrated Catalog 341.
285E Buflovak Equipment Div.

Dryers, Rotary Vacuum.....Company announces the availability of literature on their vacuum drying equipment (Catalog No. 720) and a new reference covering Stokes Laboratory facilities (Bulletin No. 640).
285F F. J. Stokes Mach. Co.

Dryers, Spray.....Literature on research spray dryer—describes and illustrates Swenson's completely packaged spray dryer for laboratory and pilot plant operations. Request informative Bulletins Nos. D-105 and D-106.
285G Swenson Evaporator Co.

Dryers, Vacuum.....Faster, uniform heat transfer, plus rapid vapor removal . . . means today's best in vacuum drying with the Patterson Conaform. For complete product information, request new Bulletin.
285H Patterson Foundry & Mach.

Drying Equipment.....To improve your product call on Proctor & Schwartz, who not only manufacture drying equipment, but have the know-how to help you in materials handling problems. Request Bulletin 390.
285I Proctor & Schwartz.

Drying Equipment, Spray.....16 p. includes facts, photographs, and diagrams explaining the principles and advantages of spray drying and the Swenson plant-scale research laboratory. Request Bulletin D-105.
285J Swenson Evaporator Co.

Drying-Sizing-Heat Treatment . . . . . Offers complete information on Fluo-Solids system . . . a new method of drying, sizing, or heat treating minus ¾ inch solids under closely controlled temperatures. Bulletin 7502.
285K Dorr-Oliver.

Drying Systems, Flash.....Systems offer means for handling materials in which drying is combined with pulverizing, or with mild distintegration, or followed by cooling & conveying product to storage. Catalog 82.
285L Raymond Div.

Drying, Vacuum.....Company offers informative brochure, "Vacuum Drying," which contains descriptions of the techniques of moisture removal from chemicals, pharmaceuticals and other industrial products.
285M F. J. Stokes Mach. Co.

Dust Collectors.....Presents information on hydro-static precipitators for use in rotary kiln service. Equipment offers high collection efficiency on even small micron particle sizes. Bulletin No. 277.
49c *American Air Filter Co.

Assure constant material flow from your bins and hoppers with . . .

PneuBin is a new concept in material flow engineering. The PneuBin unit consists of steel-backed, neoprene, pulsating panels, strategically located on the inside walls of your present bins. Working off the plant's regular air supply, PneuBin is inflated and deflated in controlled cycles, causing the contents of the bin to be "positively displaced" and thus assures free flow of material through the discharge opening.

■ ***DEPENDABLE***

PneuBin is on the job *whatever* the material flow problem. PneuBin's principle of "positive displacement" moves the bin contents, not the bin . . . assures constant, free-running material discharge. *Depend on PneuBin to insure material flow.*

■ ***SAFE***

No manpower is needed to facilitate material flow from bins when PneuBin is on the job. No more prodding, poling or sledge-hammering. *Depend on PneuBin to insure material flow . . . safely.*

■ ***ECONOMICAL***

PneuBin cuts maintenance costs, saves money year after year. Reduce bin damage . . . increase bin life. *Depend on PneuBin to insure material flow . . . safely, economically.*

■ ***QUIET***

PneuBin pulsating panels breathe . . . not snore. No hammering or loud vibration noises. PneuBin's quiet operation adds to overall plant efficiency . . . reduces employee fatigue. *Depend on PneuBin to insure material flow . . . safely, economically, quietly.*

Send for "Flow Stoppage" and free literature. PneuBin engineers will gladly make recommendations with no obligation on your part.

PneuBin

A PRODUCT OF
GEROTOR MAY CORPORATION
1525 Maryland Ave., Baltimore 3, Maryland

Process Equipment

Dust Collectors, cont.—Filters

Dust Collectors.....Reverse-jet dust collector provides many features: cleans as it filters—without interruption to operations; maintains filter porosity; prolongs filter life; etc. Offers descriptive 12 p. Booklet.
286A Western Precipitation Corp.

Dust Collectors.....Model D Aeroturn combines high-efficiency filtering with reverse-air-jet filter cleaning. Saves valuable space . . . eliminates erection costs. For full information, request Bulletin No. 3027.
286B Turner & Haws Engrg. Co.

Dust Collectors.....Company's new compact granular dust collector operates efficiently over widely-fluctuating air volume range. New in principle—revolutionary in design. Illustrated Bulletin No. 291.
49a *American Air Filter Co.

Dust Collectors.....In almost every type of industry . . . users have found high efficiency, simplicity & economy of Dustube collectors a difficult combination to equal for top performance. Details in Bulletin 372.
286C American Wheelabrator

Dust Collectors . . . . . Amerjet Fabric Arresters feature: small space requirements; maintained performance over a wide range of operating conditions; high collection efficiency; etc. Bulletin No. 279.
49b *American Air Filter Co.

Dust Control.....Manufacturer of blast cleaning and dust control equipment issues a 24 p. illustrated Bulletin covering entire company line of equipment and accessories. Features simplified index. No. 1210.
286D Pangborn Corp.

Dust Control.....Includes technical discussions & drawings of a variety of cupola dust control systems—among them being washing, dry suction cyclone, combination gas conditioner & suction bag. Bulletin No. 3.
286E Mechanical Industries.

Dust Control . . . . . Request handy reference edition, 24 p. book on dust filters & dust control. Tells why Hersey reverse jet principle is a most significant improvement in dust filter design. Bulletin No. 559.
261 *Day Co.

Dust Control.....Describes most direct method for determining the scope of your dust problem & your dust control equipment needs in new manual, "A Simplified Test Method for Dust Control Determination."
286F Dustex Corp.

Dust Control.....Covers special equipment engineered to solve individual problems posed by dusts of all kinds in addition to fly ash, chemical fumes, gases of any temperature, aerosols, etc., in Catalog A-655.
286G R. C. Mahon Co.

Dust Control.....Pangborn engineers help solve your dust problems—line of wet or dry dust collectors can save time, trouble & money. See how varied industries are benefited in "Out of the Realm of Dust."
286H Pangborn Corp.

Dust Control.....Analyses of how dust control equipment solves the problem of recovering valuable dusts—or controlling harmful dusts. Makes available Bulletin covering complete technical information. No. 800.
286I Dracco Corp.

Dust Control.....New booklet on dust control in pharmaceutical manufacturing. Three illustrated case histories cited, covering dust control at tablet presses, packagers, mixers, dryers, etc. Bulletin 550-D.
286J American Wheelabrator.

Dust Control.....Pioneers and leaders in industrial dust control for all process operations—crushing, screening, milling, grinding, blending, mixing, drying, etc. Full data on flat bag dust filters in Bulletin No. 98.
286K W. W. Sly Mfg. Co.

Dust Control.....Describes dust control and its advantages. Outstanding reclamation savings result from effective trapping of valuable chemical dusts. Maintenance costs lowered. Details in Bulletin No. 909-A.
286L Pangborn Corp.

Dust Filters.....Feature constant suction at dust sources, self cleaning for continuous operation, no auxiliary motors or blowers, no abrasion of bags by cleaner, less overall height & floor space. Bulletin 102.
286M W. W. Sly Mfg. Co.

Dust Filters.....For heavy dust loadings. Unique combination cyclone & filter unit, suitable for high pressure-vacuum systems, fully factory assembled & tested in capacities from 675-3600 cfm. Bulletin 203A.
286N Turner & Haws Engrg. Co.

Dust Filters.....Compact, versatile, simple to operate and provide ready-made answer to many industrial dust problems. Complete details on new fiber dust filter, Type FD, in illustrated Bulletin No. F-9053.
286O Ducon Co.

Dust Filters.....The cleaning efficiency of the Model F Electro-Matic extends over a wide range of particle sizes, from smoke to largest air-borne materials. Find complete product information in Bulletin No. 250.
286P American Air Filter Co.

Dust Filters.....Help solve dust control problems. Describes the numerous advantages of using the Day line of high pressure reverse jet filters . . . for efficient dust control. Illustrated Bulletin No. 528-R.
286Q Day Co.

Dust Recovery.....New profits in terms of valuable dust that can be returned to production rather than wasted in the air. Presents an informative Brochure which describes three systems of industrial dust recovery.
286R Buell Engrg. Co.

Eductors, Water Jet.....36 p. describes complete line of water jet eductors. Includes comprehensive information on design, construction, application and operation. Request fully illustrated Bulletin No. 2-M.
286S Schutte & Koerting Co.

Ejectors.....Steam jet air ejectors for modern, efficient, low-cost air removal from condensers. Covers principle of operation, ejector classification, inter-after condensers, accessories, etc. in illustrated reference.
286T Condenser Service & Engrg.

Ejectors, Steam Jet.....Informative bulletins cover the complete range of commercially obtainable vacuum. Includes the use of a simple single stage ejector and huge multi-stage unit with intercondensers.
286U Elliott Co.

Eliminators, Mist.....More effective & economical entrainment separation . . . with the new Metex Hi-Thruput herringboned mist eliminator. Covers operation & performance in illustrated Metex Bulletin ME-5.
286V Metal Textile Corp.

→ Want more information on any of these items? Just write its code number on one of the postcards inside the back cover, then mail it to us. It's that easy now.

Entrainment Elimination . . . . . Detailed case study shows how installation of a stainless steeel mesh section in an asphalt vacuum still stopped entrainment and increased capacity. Request Case Study No. 1001.
335e *Otto H. York Co.

Evaporator-Strippers.....For solvent recovery . . . designed to separate the volatile & non-volatile components of a liquid mixture—continuously & with high efficiency. Details in bulletin, "Process Equipment."
301 *Artisan Metal Products.

Evaporators.....Booklet on forced circulation evaporators—tells about Swenson "F.C." evaporators for continuous economical concentration of viscous, salting & scaling liquors. Illustrated Bulletin No. E-107.
286W Swenson Evaporator Co.

Evaporators.....Booklet on long-tube vertical evaporators—describes high capacity, steam-saving evaporators for concentrating mobile & foamy liquids & heat-sensitive materials. Illustrated Bulletin No. E-100.
286X Swenson Evaporator Co.

Evaporators, Turba-Film.....Evaporators give rapid one-pass evaporation of liquids, slurries and gases . . . especially heat-sensitive substances . . . all by continuous process. Brochure contains complete information.
286Y Rodney Hunt Mach. Co.

Exhausts, Catalytic.....Describes catalytic exhausts for removing harmful exhaust fumes from internal combustion engines in both industrial and commercial equipment. Details in a new, illustrated, 4 p. Folder.
286Z Oxy-Catalyst.

Extraction, Liquid-Liquid . . . . . 12 p. concerned with coordinating existing data & presenting simplest & most direct methods for study & design of liquid-liquid extraction processes. Diagrams, charts & graphs.
335j *Otto H. York Co.

Extraction, Solvent . . . . . Bulletin presents the principles of operation, typical applications and engineering information on standard laboratory and pilot plant York-Scheibel multi-stage extraction units.
335b *Otto H. York Co.

Extruding Machines.....32 p. booklet "Farrel-Birmingham Screw-Type Extruding Machines," describes & illustrates platicators, pelletizers, extruders, strainers, strainer-extruders, etc. Bulletin No. 195.
286AA Farrel-Birmingham Co.

Filter-Driers.....Best protection for refrigerating systems against the harmful action of dirt, moisture, and acids. Includes dimensions, installation data, construction features, etc. Illustrated, 4 p.
286BB A-P Controls Corp.

Filter Fabrics.....The right fabric adds efficiency to continuous operation. Announces availability of a full illustrated booklet, "Filter Fabric Facts," describing filter fabric development and application.
286CC Wellington Sears.

Filter Units.....Announces the design, manufacture & sale of a new series of cartridge type filter units designed especially for the electroplating & electroforming industries. Details in illustrated Brochure.
286DD Comco, Inc.

Filters.....Handle wide ranges of fluids at wide ranges of flow rates and viscosities . . . capacities from a few to over 800 gpm . . . connections from ⅜ in. IPS to 6 in. flanged. Request Micro-Klean Bulletin.
286EE Cuno Engrg. Corp.

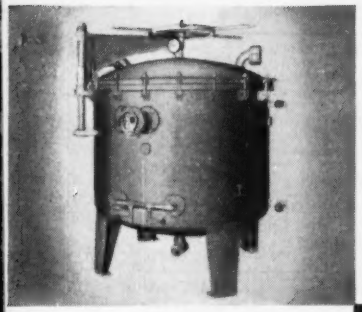
Filters.....Describes permanent membrane type liquid filters. Covers precoating, filtering & cleaning operations, with schematic drawings showing flow directions during each of the phases. Illustrated Folder F 10-54.
286FF Wagner Bros.

*From advt., this issue

For the latest in process equipment...

See Industrial

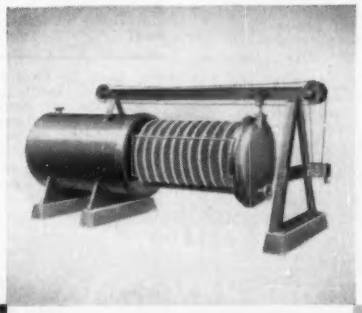
Each of these units stands at the top of its field. Every one has exclusive features that bring today's efficiency and economy to your chemical process. When you specify . . . check Industrial . . . you'll find that something new has been added.



VERTICAL FILTERS

With Industrial's exclusive self-cleaning air wash. Extra large cake space. Built for corrosive, viscous or hot fluids. Simplified lockup.

BULLETIN 100-EP-SM-854



HORIZONTAL FILTERS

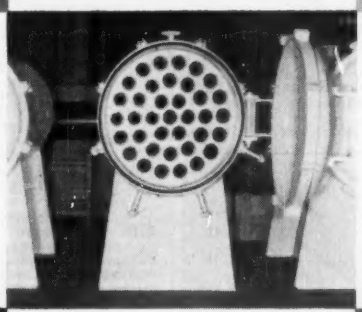
Highly efficient with capacities up to 1950 sq. ft. of filtering area. Simplifies recovery of filter cake. "Lift-out" leaves make maintenance and cleaning easy.

BULLETIN NH-155

TUBULAR FILTERS

New operating ease for smaller filtration problems. Ideal for polishing liquids, as a trap filter and as a scavenger for larger filters.

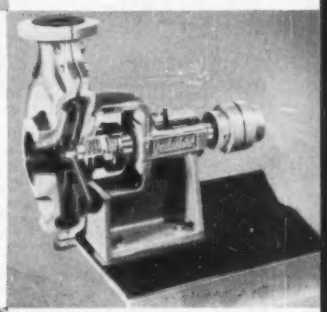
BULLETIN 75-160-755

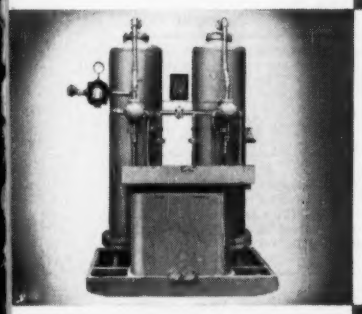


CENTRIFUGAL PUMPS

Specially designed rubber lined pumps for corrosion and abrasion resistance. Only a cut-away model can show the many features that spell long life and low maintenance.

BULLETIN 300

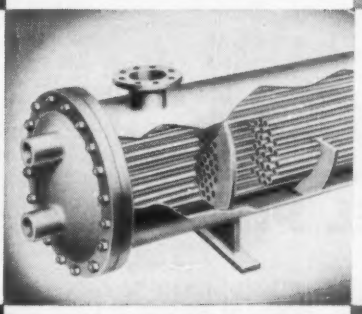




ION EXCHANGERS

With operating costs figured in pennies per thousand gallons, Industrial ion exchangers are specially built for water purification, waste treatment, metal recovery and other solution treatments.

BULLETIN 200-SM



HEAT EXCHANGERS

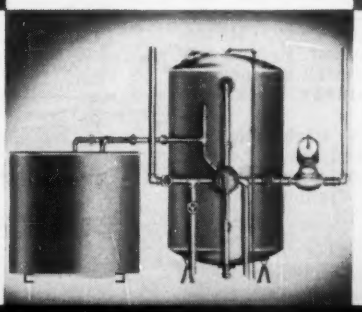
For corrosive or non-corrosive liquids and gases. Industrial builds these to suit the job and can furnish all auxiliary pumps, piping and fittings.

BULLETIN 600-2-354

WATER SOFTENERS

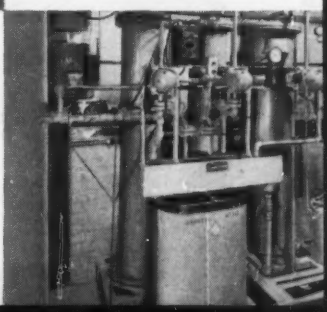
One operation, rapid Zeolite Water Softeners. Fully automatic, semi-automatic or manual controls.

BULLETIN 211



WASTE TREATMENT

For recovery, or destruction of chemicals for disposal. Many Industrial recovery systems have paid out their cost in a few months. Complete service from solution analysis to installation.



INDUSTRIAL FILTER AND PUMP MFG. CO.

5918 OGDEN AVENUE • CHICAGO 50, ILLINOIS, U. S. A.

Process Equipment

Filters, cont.—Graders, Precision

Filters.....For cleaning hot, wet & corrosive gases & air. Includes variety of installation photos, engineering drawings of filter components & complete systems, & descriptive information, in 8 p. Bulletin No. 4.
288A Mechanical Industries.

Filters.....Covers line of fast action heavy duty filters . . . engineered & constructed for the ultimate in efficient, smooth performance. Offers data on features, capacities, etc. in illustrated Bulletin 501.
288B Sparkler Mfg. Co.

Filters.....Designed for fine filtration or clarifying purposes . . . operate on simple 3-step principle of precoating, filtering & backwash cleaning. Covers operation & function in fully illustrated Bulletin F-55.
288C Croll-Reynolds Engrg. Co.

Filters.....Describes full line of industrial Auto-Klean filters. Includes data on principle, construction, operation, advantages, specifications, capacities, applications, case studies, etc. Catalog No. AK050.
288D Cuno Engrg. Corp.

Filters, Air.....Compact air filters designed to prevent dirt, oil, water, and other foreign matter from entering pneumatic instruments. Complete specifications and description in Technical Report TI 29-A-92a.
288E Foxboro Co.

Filters, Air.....New automatic, renewable media air filter can deliver clean air continuously at an operating cost less than half that of a disposable type filter of equal capacity. Offers Bulletin No. 248.
288F American Air Filter Co.

Filters, Bin Vent.....Reference describing the Type UFV Bin Vent Filter is made available by company . . . designers and manufacturers of dust collection equipment. Fully illustrated Bulletin No. F-2053.
288G Ducon Co.

Filters, Diatomite.....For water of highest clarity. Low in initial cost & available in complete range of sizes, with a choice of either monel, everdur or aloxite filter elements. Information in Bulletin 801.
288H Elgin-Refinite Div.

Filters, Disc.....Special, patented design of segments in filters use both gravity & vacuum to give a drier filter cake. Drainage is complete & positive with no blow-back. Details contained in Bulletin F9-B2.
288I Denver Equipment Co.

Filters, Disc & Agidisc . . . . . These filters are applicable to many of the jobs done by drum type filters and have the advantage of lower space requirements. For complete product information, request Bulletin.
133-6b *Eimco Corp.

Filters, Drum . . . . . Features most complete line of drum type filters. Available for high or low submergence with wash frames, scoring devices, compression rolls & many other devices. Request detailed Bulletin.
133-6a *Eimco Corp.

Filters, Gravity.....Shows full line of gravity filters & filter accessories—manually operated, semi-automatic & automatic—including operating tables, rate of flow controllers & gages. 24 p. Bulletin 2539B.
288J Permutit Co.

Filters, Horizontal.....Describes line of horizontal rotary vacuum filters in sizes from 3 ft. to 12 ft. diameter. How it works, operating advantages, applications, specifications, etc. Request Bulletin No. 202.
288K Filtration Engrs.

Filters, Horizontal . . . . . Highly efficient with capacities up to 1950 sq. ft. of filtering area. Simplifies recovery of filter cake. "Lift-out" leaves make maintenance & cleaning easy. Bulletin NH-155.
287b *Industrial Filter & Pump.

Filters, Horizontal Vacuum.....Bird-Prayon continuous, rotary, horizontal vacuum filter combines: super efficient multi-stage washing; high operating efficiency; low operating cost. Bulletin No. BP-2-55-5M.
288L Bird Mach. Co.

Filters, Industrial Sheet . . . . . Announces the availability upon request of reference, "Industrial Sheet Filters"—a 4 p. brochure, giving application, construction, sizes, flow rates, etc. of Hercules filter.
343b *Hercules Filter Corp.

Filters, Liquid . . . . . 12 p. offers specifications, engineering & performance data, photos & descriptions of recommended types of filter media, check list of liquids that can be filtered, etc. Bulletin D-1L.
223 *Dollinger Corp.

Filters, Pan Type . . . . . Main advantages of this unit are in sharp liquor separations, clean discharge and a perfectly clean washed and dried filter media at each revolution. Bulletin covers design and features.
133-6e *Eimco Corp.

Filters, Plate & Frame . . . . . Eimco Burwell filters are plate and frame filters with the exclusive advantage of eliminating down time for cleaning frames. Makes available complete product literature on request.
133-6c *Eimco Corp.

Filters, Pressure.....Describes extensive line of pressure filters & their accessories. Includes specifications, operating characteristics, outline dimensions, installation photos, etc. 16 p. Bulletin No. 2225-B.
288M Permutit Co.

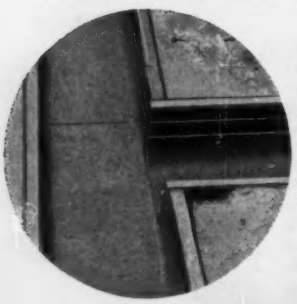
Filters, Pressure.....Covers high capacity, high efficiency, horizontal tank, vertical leaf filter designed for maximum ease & speed of operation at lowest operating & maintenance cost. Bulletin PF-2-55-5M.
288N Bird Mach. Co.

Filters, Pressure . . . . . Filters are used to open new fields in filtration. Many metallurgical & chemical processes benefit from Eimco research in this field of fluid-solids separation. Descriptive Bulletin.
133-6d *Eimco Corp

Filters, Pressure Leaf.....For flow rates two to five times greater than cloth covered presses; positive removal of all suspended solids to desired degree of clarity; etc. Find complete details in Catalog No. NC-1-53.
288O Niagara Filters Div.

Filters, Pressure Leaf.....16 p. covers principles of filtration, construction, operation, installations, blueprints of "Rapidor" and "Rotojet", etc. "Manual and Self-Cleaning Pressure Leaf Filter."
343a *Hercules Filter Corp.

*From advt., this issue



CHEMI-DRAIN is designed especially for floor drains or gutters in plant areas where corrosive or toxic liquids must be channeled away. CHEMI-DRAIN is made of corrosion-proof, never-wear-out Vitrified Clay. It's easy to install and permits construction of sloping drainage lines with excellent flow characteristics.

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Filters, Pressure, Vertical.....Elmco-Shelley filters constructed of heavy material to A.S.M.E. code specifications. They give an unrestricted flow of liquid & offer many applications. Bulletin on request.
133-6f *Elmco Corp.

Filters, Rotary Vacuum.....Covers design features . . . for handling both slow filtering & free filtering solids; how it discharges thin cake by pneumatic blow-back, & utilizes thorough counter-current wash.
289A Bird Mach. Co.

Filters, Top-Feed.....Furnishes an illustrated folder describing Swenson's efficient, money-saving top-feed filter equipment that dewaters and dries crystalline materials in one process. Bulletin No. F-101.
289B Swenson Evaporator Co.

Filters, Tubular.....New operating ease for smaller filtration problems. Ideal for polishing liquids, as a trap filter and as a scavenger for larger filters. Contains details in Bulletin No. 75-160-755.
287e *Industrial Filter & Pump

Filters, Vacuum.....Designed for modern sludge dewatering requirements. Provide valuable features: non-clogging; permanent filter media; constant output; low operating cost. Details in illustrated Bulletin 102.
289C Komline-Sanderson Engrg.

Filters, Vacuum.....Booklet on rotary-drum vacuum filters—describes & illustrates Swenson job-engineered filter equipment for continuous low-cost, efficient filtration & washing. Request Bulletin No. F-100.
289D Swenson Evaporator Co.

Filters, Vacuum.....Vacuum filters made in 3 ceramic bodies: white chemical porcelain; standard Denstone chemical stoneware; Ceratherm-550 heat-shok-resistant chemical stoneware. Bulletin F-40.
289E U. S. Stoneware Co.

Filters, Vertical.....With Industrial's exclusive self-cleaning air wash. Extra large cake space. Built for corrosive, viscous or hot fluids. Simplified lock-up. For details, request Bulletin 100-EP-SM-854.
287a *Industrial Filter & Pump

Flakers.....Produce granular or flaked material from caustic soda, asphalt, DDT, benzine, etc. Offer continuous operation . . . large capacity . . . product free of lumps. Full information in illustrated Catalog No. 352.
289F Blaw-Knox Co.

Gas Dispersion.....Describes the Autoclave Dispersimax . . . for maximum gas dispersion. Covers function, advantages, design & operating principles, performance, sizes, etc. in illustrated Bulletin No. 1254.
289G Autoclave Engrs.

Gas-Liquid Contact Equipment.....Save on space, time, money with gas-liquid contact equipment. Intimate contact between gas and liquid results in high mass transfer rates—efficient scrubbing action. Bulletin 203B.
289H Peabody Engrg. Corp.

Generators, Acetylene.....Major advance in design...can generate acetylene continuously, even during carbide recharging & residue removal. Data on operation, features, specifications, etc. Fully illustrated.
289I Linde Air Products Co.

Generators, Inert Gas.....Feature "Big 4" essentials—compact units, portable or stationary; choice of gas or liquid fuels; low cost per cu. ft. of capacity; little supervision or maintenance. Bulletin 100-B-14.
289J Roots-Connersville Blower.

Generators, Inert Gas.....Aid in solution of purging or blanketing problems. Complete with the latest fire checks and safety devices. For essential details and technical information request Bulletin 1-10.
289K C. M. Kemp Mfg. Co.

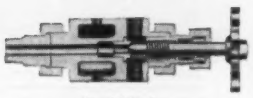
Graders, Precision.....Provide methods of sizing or separating various grains & other granular materials by thickness & by width to degrees of exactness & uniformity heretofore unobtainable. Illustrated, 4 p.
289L Hart-Carter Co.

No. 25-R-20 gage, side connected with No. 66 valves (offset inside)

Large Chamber Gage, Reflex Type

Welding Pad Gages, staggered for continuous visibility

GA Instrument Piping Valve saves connections



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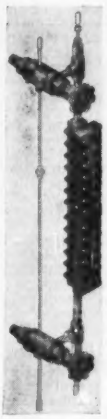

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Process Equipment

Granulators—Mixers

Granulators.....In a range of four sizes . . . provide many unique features. Include all steel construction, double supported, ruggedly mounted, hardener rotor, absolutely no flyback of materials, etc. Illustrated.
290A Alsteele Engrg. Wks.

Grinding & Blending Systems.....Integrated system features savings in time and money in combined functions of grinding, blending and dust control. Results in greatly increased production. Illustrated Bulletin.
290B Pulverizing Machy. Div.

High-Pressure Equipment..... Equipment described in new reference embraces pilot plants, reaction vessels, fittings, valves, tubing, pumps, compressors, pressure balances, instruments, etc. Catalog No. 406.
290C American Instrument Co.

Homogenizer-Disperser.....Only mill designed with the patented Triple-Action, Triple Angle Rotor-Stator combination. This & numerous other exclusive features described in fully illustrated, 16 p. Bulletin.
290D Tri-Homo Corp.

Homogenizers & Pumps.....Detailed information on industrial homogenizers & high pressure pumps. Covers data on application, construction, operation, specifications, etc., in fully illustrated Bulletin No. 1-53.
290E Manton-Gaulin Mfg. Co.

Impactors.....Offer lowest possible cost-per-ton in producing top quality materials from 2" down to 35 mesh with a minimum of fines—or much smaller where more friable products are handled. Detailed literature.
290F Williams Patent Crusher.

Ion Exchangers.....With operating costs figured in pennies per thousand gals., Industrial ion exchangers are specially built for water purification, waste treatment, metal recovery, etc. Bulletin 200-5M.
287e *Industrial Filter & Pump

Jet Apparatus.....Includes basic information on jet principle, jet apparatus terminology, and data on jet construction, operation, and advantages offered by jet apparatus. 12 p. illustrated Bulletin No. J-1.
290G Schutte & Koerting Co.

Kettles.....Corrosion-resistant kettles meet every processing need. They are practical, easy to clean and keep clean, meet all sanitary regulations and are available in sizes up to 500 gal. capacity. Offers Bulletins.
290H Lee Metal Products Co.

Kettles, Processing..... Buflovak-Dopp kettles with scraping agitator speed production . . . make a better product . . . save money. Valuable information concerning processing kettles in illustrated Catalog No. 356-R.
290I Buflovak Equipment Div.

Kilns, Rotary.....Every part is precision designed, precision built to give you maximum protection against mechanical trouble of all kinds. Offers complete information in illustrated Bulletin No. A-422.
290J Vulcan Iron Wks.

Kilns, Rotary.....Efficient thermo-processing of products. Used in the production of lime, bauxite, cement, sodium silicate, alumina, etc. Complete data on design features offered in illustrated Bulletin 1115.
76a *Traylor Engrg. Mfg. Co.

Laboratory Equipment.....Batch and continuous test models of crushers, screens, ball mills, pulverizers, rod mills, classifiers, agitators and mixers, pulp distributors, feeders, etc. Data in Bulletin LG3-B10.
290K Denver Equipment Co.

Laboratory Equipment.....Details on chemical & ceramic laboratory equipment. Includes data on portable mixers, ribbon mixers, jaw crushers, blungers, filter presses, jar mills, jars, etc. Illustrated Bulletin No. 77-A.
290L International Engrg.

Laboratory Machines.....Company provides valuable data on their line of equipment—laboratory crushers, laboratory crushing rolls, laboratory sample grinders, laboratory swing-sledge mills, etc. Bulletin 067.
290M Sturtevant Mill Co.

Lubrication Systems.....Trabon lubrication systems guarantee that the right amount of oil or grease will be delivered to vital bearings . . . at the right time and in the right place. Details in Bulletin No. 529.
290N Trabon Engrg. Corp.

Mills.....For grinding, mixing, emulsifying, homogenizing, disintegrating & dispersing all types of products including paints, inks, chemicals, ceramics, plastics, etc. Data in 16 p. fully illustrated Bulletin.
290O Morehouse Industries.

Mills.....Request fully illustrated "Kady Mill" Book to find out about the highest performance in dispersion. Covers Kinetic Dispersion principle, construction details, installation dimensions, etc.
292 *Kinetic Dispersion Corp.

Mills, Ball.....A steel-head ball mill will suit your particular need. Five types of discharge trunnions. All-steel construction. Low initial cost due to quantity production. Quick delivery. Bulletin No. B2-B13.
290P Denver Equipment Co.

Mills, Ball & Pebble.....Outstanding in the field of fine grinding, mixing and processing. Built of all steel welded construction, they feature great strength and ruggedness. 20 p. illustrated Catalog No. 100.
290Q International Engrg.

Mills, Ball & Pebble.....Announces the availability of a valuable Ball & Pebble Mill Catalog—40 p. of material regarding selection of right mill for job, description of equipment, etc. Request Catalog Y.
344a *Paul O. Abbé

Mills, Colloid.....Operate at speeds approaching the theoretical minimum required for true wet micro grinding —shaft speeds up to 10,000 rpm depending on size and type of mill. Offers descriptive literature.
290R Admiral Tool & Die Co.

Mills, Grinding.....Dry, grind, classify—in a single system—materials carrying an appreciable amount of surface moisture, reducing them to dry, finely-ground products. Offers full details in Bulletin 17-B-11.
290S Hardinge Co.

Mills, Grinding.....Mills Applicable for wet or dry, course or fine grinding. Assure a uniform product of desired fineness. Improved design and construction features fully described. Illustrated Bulletin No. 8121.
76b *Traylor Engrg. & Mfg. Co.

Mills, Hammer.....Williams Helix-Seal hammer mills combine all the advantages of an efficient hammer mill with a closed-circuit screw type feed. Includes description and features in illustrated Brochure.
290T Williams Patent Crusher.

Mills, Hammer.....Swing-sledge mills & hinged-hammer pulverizers built for reduction of soft, moderately hard & tough or fibrous substances to any degree of fineness ranging from 1 in. to 20 mesh. Bulletin No. 084.
290U Sturtevant Mill Co.

Mills, Impact.....As a grinding mill & mixer . . . impact mill has the greatest capacity per hp & per unit of space now available to the chemical processing industries. Complete details offered in Bulletin 4724.
290V Entoleter Div.

Mills, Jar.....Valuable descriptive literature is made available containing 40 p. of information regarding design, construction & operation of Paul O. Abbé Jar Mills. Request Jar Mill Catalog U—Section A.
344c *Paul O. Abbé

Mills, Ring-Roll.....Have wide application—they economically grind either hard or soft substances from 1" to 1½" in size to any mesh between 6 & 200. Description, capacities & specifications in Bulletin No. 079.
290W Sturtevant Mill Co.

Mills, Rock-Emery.....For fine grinding of soft & moderately hard materials such as clay, shale, chalk, etc. Includes description, sizes made & approximate capacity per hour on average materials. Illustrated.
290X Sturtevant Mill Co.

Mills, Roller.....Grind phosphate rock from all types of deposits. Also handle chemicals, non-metallic minerals & manufactured products. Economical for large tonnages. For further details request Catalog 69.
290Y Raymond Div.

Mills, Roller.....Ball bearing roller mills feature: trouble-free service; smoother, quieter, higher speed operation; greater capacity; exceptional uniformity of finished product; etc. Completely illustrated.
290Z Schutz-O'Neill Co.

Mills, Roller.....For grinding chemicals, pigments and a great variety of non-metallics and manufactured products, Raymond roller mills offer you an economy-proved method of production. Request Catalog 72.
290AA Raymond Div.

Mills, Vertical.....Scale new heights in superfine grinding. Outstanding development is a specialized grinding unit designed to operate in a fineness range beyond limits of ordinary pulverizers. Catalog 78.
290BB Raymond Div.

Mixers.....Data on turbine & slow speed heavy duty agitators . . . for open & closed tanks. Covers operation & applications of super-turbine & injection mixers, mixer data, mixer drive heads, etc. Bulletin No. 76.
290CC International Engrg.

Mixers.....Company's line of Jumbo mixers meets every requirement imposed by heavy loads. Standard-duty mixer is equipped with two roller bearings mounted on heavy fabricated supports. Bulletin 800.
290DD J. H. Day Co.

Mixers.....Fully illustrated & detailed Bulletin features valuable information on the company line of open & closed tanks, top-entering mixers, side-entering agitators, filters, transfer pumps, etc. No. C-652.
290EE Alsop Engrg. Co.

Mixers.....Many types available to satisfy all conditions of fluid consistencies & tank sizes. For 3 bulletins covering mixers (portable, top & side entering, turbine), request Catalog Series 26.
109a *Eastern Industries

Mixers.....Mixing & homogenizing equipment for vacuum or pressure operation . . . affords advantages of paddle mixing & high speed homogenizing in one compact installation. Covers details in Circular 403.
290FF Admiral Tool & Die Co.

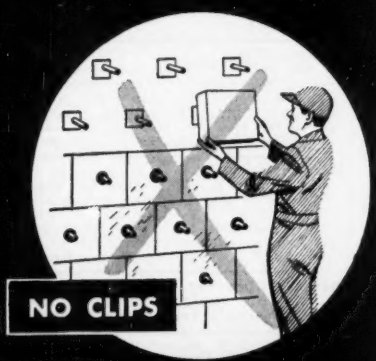
Mixers.....Mixers meet tremendous variety of fluid mixing needs. Includes valuable data on side entering mixers, top entering mixers, portable mixers, etc. Request four helpful catalogs—Catalog Series 17.
290GG Eastern Industries.

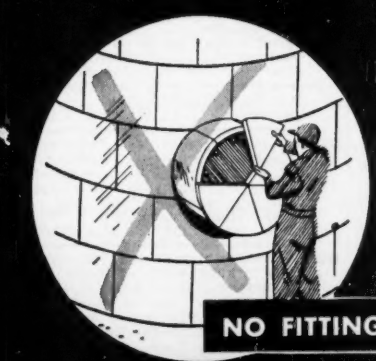
Mixers.....For faster more thorough mixing. Describes the Hermas Jet mixer: theory of operation; interchangeable rotors; production capacities; applications; accessories; etc. Fully illustrated, 4 p. Folder.
290HH Hermas Mach. Co.

*From advt., this issue

POLY-CELL

. . . the Sprayable Foam Insulation





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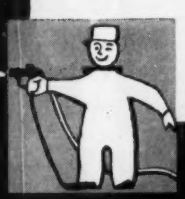

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Process Equipment

Mixers, cont.—Presses, Filter

Mixers.....Includes pertinent information on Mix Mor permanent mounting mixers. Describes uses, methods of mountings, stuffing box, specifications, etc., for gear drive & direct drive models. Illustrated.
292A McNamara Mfg. Co.

Mixers.....Company makes available Confidential Mixing Data Sheet. Helpful checklist enables you to develop a complete technical description of agitation required for your process, quickly & easily. No. B-107.
Cov.-4d *Mixing Equipment.

Mixers.....Features a complete line of mixers designed for handling everything from the thinnest liquids . . . to the thickest doughs. Request descriptive literature on equipment for your mixing requirements.
292B Struthers Wells Corp.

Mixers.....New—broad in application—standardized for low cost. Four different models, for propeller, turbine, gas absorber and other mixing elements. Complete details in fact-filled Unimixer Bulletin.
292C Patterson Foundry & Mach.

Mixers.....The Eppenbach Homo-Mixer is a high speed, high shear homogenizer-mixer. Literature covers description, method of operation, numerous advantages, etc. Request fully illustrated, 8 p. Catalog 402-R-1.
292D Admiral Tool & Mfg. Co.

Mixers.....Meet requirements for heavy-duty kneading & mixing. Feature air seal type stuffing boxes, new dumping mechanism, heavy-duty bearings, etc. Find complete information in illustrated Bulletin No. 600.
292E J. H. Day Co.

Mixers.....Shear-Flow incorporates all desirable features for mixing textile colors. It not only mixes, but it disperses solid pigment colors in various clears or extenders. Offers full details on new mixer line.
292F Gabb Special Products Div.

Mixers.....Company furnishes illustrated literature describing their line of Mixall Mixers . . . the intensive mixers with "claw" mixing propellers. Includes data on features, models, propeller specifications, etc.
292G Craddock Equipment Co.

Mixers.....Shows new Type L mixer with air motor for laboratory and small job mixing. New type patented stirrers, size 1 and 2, are furnished with each motor. Complete details in illustrated Bulletin 551.
292H Conn & Co.

Mixers.....Abbé Dispersall mixers give you power & speed, plus tremendous advantage of easy cleaning, which readily allows shifting from one color or formulation to another. Complete details in Catalog 68.
292I Abbé Engrg. Corp.

Mixers.....Turbo-Mixers for the fermentation industry. Bulletin includes typical Turbo 200 hp fermenter design, Turbo seed tank agitator with vertical drive, Turbo extractor with vertical drive, etc. No. 211.
292J General American Trans.

Mixers.....Announces 24 p. fully illustrated "International Mixer Pictorial" which covers company's line of portable mixers, propeller mixers, mixer drive heads, side entrance mixers, etc. Catalogue No. 79.
292K International Engrg.

Mixers.....Agitation specialists show how their services can help you attain the desired goal in process agitation—highest efficiency at lowest outlay cost. Covers mixer line in illustrated Catalog No. B-105.
292L Mixing Equipment Co.

Mixers.....Describes Super Agitators & Mixers. Patented standpipe around propeller shaft assures positive agitation & circulation. Patented wearing plate prevents sand-up on shut-down. Bulletin No. A2-B4.
292M Denver Equipment Co.

Mixers.....Mix-Mullers for chemical and process industries. Covers Simpson mulling principle; mulling for dry, wetted and plastic mixtures: Mix-Mullers for special requirements; etc. 12 p. Bulletin No. 522.
292N National Engrg. Co.

Mixers, Dry.....Describes conical blenders (design, operation, application, capacity, sizes & specifications) & ribbon mixers (operating & construction features, specifications, etc.). Illustrated Bulletin No. 78.
292O International Engrg.

Mixers, Dry Batch.....Efficient rotating drum-type machines for mixing various substances together into a homogeneous and inseparable whole, every part of which presents the same analysis. Fully illustrated.
292P Sturtevant Mill Co.

Mixers, Dry & Paste.....Announces the availability upon request of a Dry & Paste Mixers Catalog. 24 p. reference describes Paul O. Abbé Ribbon & Paste Mixers, Double Cone Blenders. Catalog No. V1.
344b *Paul O. Abbé

Mixers, Laboratory.....Laboratory mixers: electric motor driven, direct drive, variable speed and geared models. Air motor driven models also available. Provides complete details in Bulletin No. B-112.
Cov.-4h *Mixing Equipment.

Mixers, Pipe Line.....Company issues an informative booklet describing the Nettco Flomix . . . a patented and unique pipe line mixer for continuous processing applications. Fully illustrated Bulletin No. 531.
292Q New England Tank & Tower.

Mixers, Portable.....New 16 p. catalog provides product data & extremely helpful engineering information & diagrams . . . a guide to choosing proper portable mixer & accessories. Illustrated Bulletin No. 520.
292R Eastern Industries.

Mixers, Portable.....Includes information on the numerous features and advantages, materials of construction, sizes and specifications, portable-permanent mountings, etc., in illustrated Bulletin 74-A.
292S International Engrg.

Mixers, Portable.....Use in industry reduces costs, saves time, labor and secures better and more refined products. Catalog includes data on construction, dimensions, specifications, etc. 28 p. No. B-108.
Cov.-4e *Mixing Equipment.

Mixers, Proportional.....Presents valuable information on company's Vari-Set proportional mixer with Adjustable Jet. New selection chart gives complete specifications and dimensions. Request Bulletin L-700.
292T Eclipse Fuel Engrg. Co.

Mixers, Side Drive.....Presents 8 p. fully illustrated reference covering Nettco side drive with shut-off. Describes how the shut-off operates, numerous advantages, exclusive features, etc. Bulletin No. 532.
292U New England Tank & Tower.

*From advt., this issue

Send for the

"KADY® MILL" Book

to find out about the highest performance in dispersion

● Unless you have investigated the KADY MILL and the Kinetic Dispersion principle as applied to your own reaction, colloidal or dispersion problems, you may be missing the easiest and quickest way to lower your costs or improve your product—or both. The first step is to send for the "Kady Mill" Book. Address

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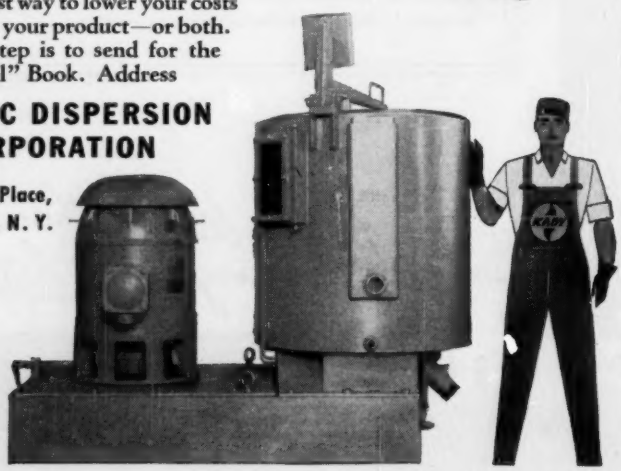

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Mixers, Side Entering.....Furnishes detailed information on features, typical applications, mechanical design, maintenance, shaft seals, methods of installation, etc. in completely illustrated Catalog B-104.
Cov.-4c *Mixing Equipment.

Mixers, Side Entering.....The Type "NU" side entrance mixer is a brand new unique mixer design. It has no cast parts and is of all welded construction, including the stuffing box. Illustrated Bulletin No.72-A.
293A International Engrg.

Mixers, Steam & Water.....For a small, localized supply of warm or hot water . . . use company line of steam and water mixers. Economical, easy to install, feature numerous uses. Full details in Bulletin No. 369.
293B Powers Regulator Co.

Mixers, Top Entering.....Illustrated and detailed 32 p. Catalog includes advantages, typical installations, mechanical description, construction information, dimensions and selection tables, etc. Catalog No. B-102.
Cov.-4a *Mixing Equipment.

Mixers, Top Entering.....Information on top entering propeller mixers. Includes data on selection, construction features, sizes & specifications of high & slow speed top entrance mixers, etc. Bulletin No. 73.
293C International Engrg.

Mixers, Top Entering.....Makes available pertinent information on top-entering mixers (propeller type) . . . for closed tanks, pressure & vacuum . . . for open & loose-covered tanks. Data in Catalog B-103.
Cov.-4b *Mixing Equipment.

Mixing & Extrusion Machinery.....Covers company line of Vac-Aire de-airing pug mills . . . for pottery, floor tile, electric porcelain. Includes schematic drawing showing construction details. 8 p. Bulletin 62-A.
293D International Engrg.

Mullers.....Contains valuable information concerning company's line of Cincinnati mullers (24" diameter & 12" diameter)—general specifications, numerous features, suggested uses, etc. Illustrated Bulletin 5.
293E International Engrg.

Pelleters, Continuous.....Produce top-quality pellets in tremendous volumes at reasonable investment & low operting cost. Large & small pellets—even 1" cubes—in many shapes & sizes. Complete details.
293F Sprout-Waldron & Co.

Pelleters, Plastic.....Offer valuable features: enormous capacity; relatively small & compact; produce pellets uniform in size free from dust; cuts are clean & free from feathers; etc. 4 p. Index No. App. 210.
293G Taylor, Stiles & Co.

Power Units, Hydro-Air.....Company releases 16 p. fully illustrated bulletin to give the first complete application, specification, price, and operating data on its new Hydro-Air power unit. Bulletin No. 61763.
293H Pantex Mfg. Corp.

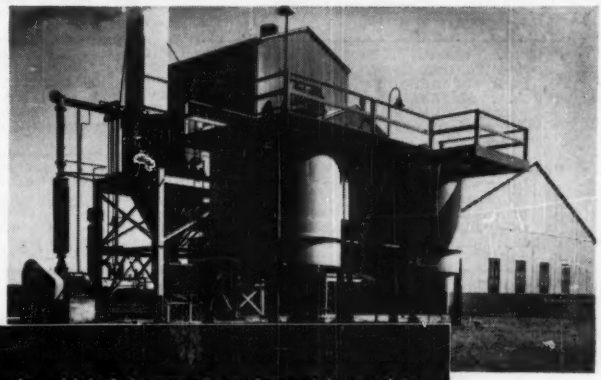
Precipitators.....28 p. covers line of electrical precipitation equipment. Describes general principles of electrical precipitation, & includes sections devoted to the chief applications. Completely illustrated.
293I Research-Cottrell.

Presses, Continuous.....Company line of continuous presses are provided in three sizes . . . and are the most efficient method of extracting excess moisture from semi-solids . . . at lowest possible cost. Offers catalog.
293J Davenport Mach. & Foundry.

Presses, Filter.....Data on numerous features: low first cost; low operating cost: long service life ... high resale value; operate to 1000 psi at high or low temperatures; etc. Offers full details in illustrated Catalog.
229a *T. Shriver & Co.

YOU CAN DO

SO MANY THINGS — SO ECONOMICALLY with SUBMERGED COMBUSTION



This installation in which Subcomco® equipment is used to extract salts from a heavy brine solution is a typical example and it works just as efficiently on such applications as these:

- concentrating acids
- altering spent caustic and "doctor" solution for waste disposal
- evaporating water from waste liquors
- heating acids and alkalis

and there's practically

NO CORROSION PROBLEM

You can do these things at far lower cost with Submerged Combustion because original installation can be far simpler and smaller by comparison to an installation using conventional heating equipment. Fuel savings are considerable. Radiation loss is negligible and since heat is introduced directly into the liquid, stack temperatures are often lower than solution temperatures. Maintenance is lower since there is no heat transfer surface to scale or corrode. Consequently Submerged Combustion offers special advantages in evaporating solutions with an inverted solubility curve.

Write for this Subcomco® Application Manual. It explains the general nature of Submerged Combustion, shows many applications and compares installation and operating costs with conventional equipment.

SUBCOMCO®

with the exclusive patented safety feature **NOZ-L-MIX®**

Submerged Combustion COMPANY OF AMERICA, INC.

HAMMOND, INDIANA

A Quarter Century of Service to Industry

Process Equipment

Presses, Filter, cont.—Separators, Centrifugal

Presses, Filter.....Presents Catalog & Specification Book. Helps to improve your understanding of a vital process . . . aids in the selection of the proper equipment for your specific filtration requirements.
294A D. R. Sperry & Co.

Process Equipment.....8 p. Booklet contains advantages, operating characteristics and a description of automatic processing equipment for foamed and unfoamed polyurethanes and other multi-component resins.
294B Applied Engrg. Assoc.

Process Equipment.....Describes entire company line—conical mills, single & double-shell rotary dryers, automatic backwash sand filters, thickeners-clarifiers, constant-weight feeders, etc. Catalog 100-A-11.
265a *Hardinge Co.

Process Equipment.....Complete data on equipment for chemical process industries. Includes heat transfer equipment, horizontal & vertical pressure filters, rubber lined centrifugal pumps, etc. Catalog CEC-55.
294C Industrial Filter & Jump.

Process Equipment.....Custom engineered equipment for petroleum refineries . . . chemical & power plants. Included are stills & towers, heat exchangers, reactors, oil chillers, etc. Illustrated Bulletin E-1.
294D Henry Vogt Mach. Co.

Process Equipment.....Company makes available their completely illustrated Catalog on blending, processing, and heat exchange equipment for the chemical and processing industries. Bulletin No. 13.
294E Patterson-Kelley Co.

Process Equipment.....Reference covers the complete line of Buflovak equipment for processing food products, pharmaceuticals, chemicals and for by-product recovery. Details in illustrated Catalog No. 363.
294F Buflovak Equipment Div.

Process Equipment.....Illustrated, 32 p. includes sections on: equipment for chemical unit operations; process plant electrical apparatus; mechanical power transmission equipment; etc. Bulletin No. 25C6177J.
294G Allis-Chalmers Mfg. Co.

Process Equipment.....Main categories of equipment produced include heat exchangers, stills, code vessels (ASME & ASME-API), evaporators, jacketed vessels, etc. Illustrated folder presents facilities & services.
294H Oscar Krenz, Inc.

Processing, Air-Gas.....Automatic protection for air and gas systems—compressed air, process gases dried continuously . . . automatically . . . with Selas Dehydrator. Informative bulletins now available.
294I Selas Corp. of America.

Processing Equipment.....Describes corrosion-resistant processing equipment . . . precision built to your specific requirements to give long years of peak performance with low maintenance. Technical Bulletins.
294J Lee Metal Products Co.

Processing Equipment, Auxiliary..... Announces availability of a complete data folder, "Pfaudler Glassed Steel Vacuum Receivers, Crystallizing Dishes, Condensers, Evaporating Pans." Bulletin No. 921.
294K Pfaudler Co.

Processing Equipment, Glassed Steel..... Resisting alkalies up to pH 12 at 212°, and every acid except hydrofluoric, glass protects product purity, keeps corrosion from chewing up equipment. Bulletin No. 902.
141f *Pfaudler Co.

Processing Equipment, Liquid.....Offers a fully illustrated 32 p. bulletin describing "Sealed-Disc" & "Disc-Pak" filters, transfer pumps, portable mixers, tanks, extractors, etc. Request Bulletin No. G-255.
294L Alsop Engrg. Corp.

Processing, Low-Temperature.....If your project calls for gas separation by low-temperature processing, get in touch with Air Products. 36 p. brochure discusses broad possibilities and company's facilities.
17 *Air Products

Propellers.....Data Folder describes smooth, vibrationless propellers for stirring, mixing, aerating, etc. Balanced to avoid whip and strain on shafts. In a wide variety of metals, and in sizes up to sixty inches.
294M Michigan Wheel Co.

Pulverizers.....Valuable data on Superfine pulverizer . . . a centrifugal air attrition impact pulverizer and classifier in a single unit. Covers numerous features, specifications, construction, etc. Illustrated.
294N Schutz-O'Neill Co.

Pulverizers.....Accessibility—simplicity—compactness—features of new design, which makes Ray-Ducer so easy & economical to use for producing various grades of powdered materials. Bulletin offers full details.
294O Raymond Div.

Reactors, Glassed Steel.....12 p. includes full specifications, data on working capacities, all design features and available accessories for these popular 50- to 2000-gallon reactors. Bulletin No. 920.
141e *Pfaudler Co.

Reactors, Solids-Contact.....Are ideally suited to all precipitation processes involving cold water; clarification of surface waters; lime or soda softening of hard waters; etc. Data in Publication No. 5001-A.
294P Cochrane Corp.

Receivers, Air or Gas.....Built in accordance with ASME standards. 2½ to 570 cu. ft. capacity, for 23 to 8000 cfm. Includes information on features and specifications in illustrated Bulletin No. R-19C.
129j *Joy Mfg. Co.

Reclaimer Systems, Oil.....A simple, economical and efficient method of restoring contaminated lubricating and sealing oil to the full value of new oil. Offers full details on reclaimers in Bulletin No. R-60.
294Q Hillard Corp.

Reclamation Systems.....Denver reclamation systems take dollars out of your wastes—if you have valuable materials in your wastes, these systems can make recovery profitable. Catalogs & Brochures on request.
294R Denver Equipment Co.

Reformers, Koppers-Hasche.....Based on a unique adaptation of the cyclic heat-regenerative principle. Company announces availability of booklet which fully describes its operation when producing heating gas.
294S Koppers Co.

Roll-Setting.....Hydra-Set is a unique hydraulic roll-setting device that takes all guesswork out of roll settings. Comes as optional equipment on new mills or as field conversion kit. Spec. Sheet No. 1-400 R.M.
294T J. H. Day Co.

Rolls, Crushing.....Built in numerous sizes and in three types: balanced rolls; plain balanced rolls; laboratory rolls. Furnishes detailed Bulletin covering description, uses, approximate roll capacities, etc.
294U Sturtevant Mill Co.

Samplers.....Covers automatic sampling & its application to many different problems. Includes specifications, detailed data, charts, photographs, etc. which graphically describe samplers. 12 p. Bulletin S1-B4.
294V Denver Equipment Co.

Screening Equipment.....Illustrated, 28 p. describes line of screening equipment for efficient removal of solids from water, sewage & industrial waste. Complete dimensions & specification data. Book 2587.
294W Link-Belt Co.

Screens, Vibrating.....Describes in detail two new expanded lines of vibrating screens. Feature drawings, tables, and numerous illustrations of Bonded screens in use. Request Bulletins Nos. 1086 and 1087.
294X Bonded Scale & Mach. Co.

Screens, Vibrating.....For high-capacity screening of a broad range of materials—"CA" vibrating screens are your answer. In complete range of sizes to suit all plant capacity requirements. New book 2554.
294Y Link-Belt Co.

Screens, Vibrating.....Offers valuable information concerning Moto-Vibro-screens . . . for screening to any fineness from ¼" down to 50 or 60 mesh. Covers features & operation in illustrated Bulletin 077.
294Z Sturtevant Mill Co.

Screens, Vibrating.....For fast, clean separation without blinding. Give even, smooth flow of material because of patented "true-circle" eccentric action. Two-bearing construction saves 50% hp. Bulletin S3-B11.
294AA Denver Equipment Co.

Screens, Vibrating.....For economical separation of light to medium weight materials—choose "UP" vibrating screens. In open, semi-enclosed, or totally-enclosed types. Complete details contained in Book 2377.
294BB Link-Belt Co.

Screens, Wire.....Wire screens for vibrators are serving faithfully in daily operations in the major coal and mining centers of the world. Offers complete information on product line in Bulletins Nos. 5, 6, and 7.
294CC Cleveland Wire Cloth & Mfg.

Scrubbers, Gas.....For removing tar vapor — lampblack — metallic fumes. Rotary multi-stage gas scrubbers have proven answer to low-volume requirements in metallurgical & processing industries. Bulletin AP-425.
294DD Buffalo Forge Co.

Scrubbers, Gas.....Installations of this equipment successfully handle difficult gas scrubbing problems. Help stop air pollution and recover valuable materials. World-wide usage. Details in Bulletin No. M102.
294EE Chemical Construction Corp.

Separating & Sizing Machinery.....If you process granular materials that must be uniform in length, width, or thickness, Hart-Carter sizing machinery may be what you need. Details in Folders CPG-2 and L-1.
294FF Hart-Carter Co.

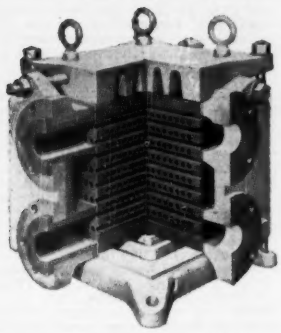
Separators.....You can use liquid separators in steam distillations, solvent extractions, and organic reactions in chemical and pharmaceutical processing. Full details in Bulletins Nos. SC-1044 and S-1010.
294GG Selas Corp. of America.

Separators, Centrifugal.....Rugged, simple centrifugal separator . . . for continuous concentration or classification of bulky suspended solids. Construction, applications, operation, etc. in Bulletin No. 3053.
294HH Merco Centrifugal Co.

→Want more information on any of these items? Just write its code number on one of the postcards inside the back cover, then mail it to us. It's that easy now.

*From advt., this issue

HEAT EXCHANGERS
(CUBICAL)



IMPERVITE CUBICAL units provide greatest ratio of heat transfer surface to overall size . . . accommodate pressures to 100 psi, transfer surface to 100 square feet . . . virtual immunity to exterior and interior physical shock. Headers can be lined for handling two corrosives simultaneously. Furnished in four standard models. WRITE TODAY FOR CATALOG.

RUPTURE DISKS

Capable of withstanding temperatures to 325°F., IMPERVITE rupture disks are machined to precision tolerance from monolithic pieces of chemically impervious graphite bar stock. Disks will fit any standard 150# flange, are available from 2" to 12" diameters for pressures from full vacuum to 250 psi. IMPERVITE rupture disks feature practically 100% breakout of pressure membrance to allow maximum full opening for safe escape of excess pressures. Sizes larger than 12" furnished on special order. Data sheet available giving detailed burst ranges, installation information, etc.

PIPE·FITTINGS·VALVES

IMPERVITE pipe, fittings and valves feature complete immunity to almost all corrosives. IMPERVITE is lightweight, non-contaminating and is unaffected by thermal shock. Armored IMPERVITE pipe is available for critical pressure applications. Complete 12-page catalog now available. Write for yours.

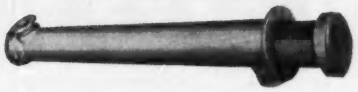
TOWERS

Standard sizes include 12, 15, 18, 24 and 30-inch diameters. All, except 30-inch size, are machined from monolithic extrusions. Towers can be furnished to almost any height by assembling one section above another. Various types of gasketing can be furnished, and entire unit is bound together with spring-loaded tie-rods. Towers can be used for absorbing, scrubbing, fractionating, evaporating, extracting, and other processes.

FIELD SERVICE

Highly trained Falls Industries' crews are available on 24 hour notice for repair or maintenance of IMPERVITE or other impervious graphite equipment. Details available on request.

HEAT EXCHANGERS
(CROSS BORE)



The IMPERVITE CROSS-BORE model is the only standard impervious graphite heat exchanger strong enough to withstand 200 psi operating pressure. Exceptional strength of the "one-piece" bundle resists mechanical shock, including severe steam hammer. Unique design permits quick, thorough cleaning of shell side. The CROSS-BORE exchanger is an exclusive development of Falls Industries. ADDITIONAL INFORMATION AVAILABLE.

CENTRIFUGAL PUMPS

Improved IMPERVITE centrifugal pumps feature a new, virtually leak-proof, high-density-carbon seal, developed and produced by Falls industries. Pumps utilize oversized bearings and heavy-duty stainless shaft. Shaft and impeller are made as two separate and independent components for quicker, more economical maintenance. All rotating parts are precision balanced. IMPERVITE centrifugal pumps give longer, trouble-free service, especially under severe operating conditions. WRITE FOR NEW CATALOG.

SEE US AT THE SHOW
BOOTH No. 37

HIGH TEMPERATURE EQUIPMENT

Where higher temperatures are desired in processes (above 340°F.), many types of equipment can be furnished for this purpose, made from GRAPH-I-TITE, the new material of construction which resists the effects of practically all corrosives at any temperature required. This material is non-contaminating, impermeable, and is not wetted by molten metals and salts. (GRAPH-I-TITE is a development of Graphite Specialties Corporation, a Falls Industries' associate company).

DESIGN ENGINEERING

Complete facilities and extensive experience permits Falls Industries to design, fabricate and install complete H Cl absorption plants, fractionating processes, alcohol and ammonia stills, etc. Falls also produces special machined graphite components, such as crucibles, molds, bearings, boats, and electric furnace parts.

HEAT EXCHANGERS
(TUBE AND SHELL)

IMPERVITE tube and shell exchangers are available as standard models in sizes from 7 to 650 tubes. Certain design features, such as tube spacing, head construction and tube sheet connections can be varied to provide maximum versatility of application. Whatever the design, IMPERVITE always means premium quality impervious graphite heat exchangers. ADDITIONAL INFORMATION AVAILABLE.

HEAT EXCHANGERS
(CUSTOM DESIGNED)

Accomplished engineering, combined with flexible production facilities, make Falls Industries an exceptionally reliable supplier of all types of custom processing equipment. Unit illustrated is a 685 tube IMPERVITE custom exchanger used as one of a series of condensers in an acid recovery process.

ABSORBERS

Wide range of sizes and types available from stock. Falling film absorbers are furnished in sizes from 12 to 241 tubes and produce cool acid in one pass, take high-temperature feed gas and feature minimum pressure drop. Packed tower, jacketed tower and internally cooled tower IMPERVITE absorbers are also available from stock in sizes to meet your specifications. Write for catalog.

CASCADE COOLERS

All units use low-pressure-drop ells. Improved extrusion methods give IMPERVITE tubing more uniform heat transfer characteristics and greater ability to withstand higher temperature without spalling.

FALLS INDUSTRIES PRODUCES ALL OF ITS OWN EQUIPMENT AND ASSUMES COMPLETE AND UNDIVIDED RESPONSIBILITY FOR ITS DESIGN, FABRICATION AND OPERATION

Falls Industries Inc.
31915 AURORA RD. SOLON, OHIO
PHONE: CH. 8-5357
TELETYPE: SOLON-0-720

Process Equipment

Separators, Centrifugal, cont.—Wire Cloth

Separators, Centrifugal.....Illustrates & describes new centrifugal separating machine . . . ideally suited to needs of the chemical industry. Includes advantages, features, & characteristics. Bulletin 5426.1.
296A Western States Mach. Co.

Separators, Centrifugal.....Continuous separation & increased product yield are outstanding advantages of production flowplans designed around Merco separators. Features & operation in illustrated Bulletin 4051.
296B Merco Centrifugal Co.

Separators, Centrifugal.....Extremely efficient operation assures finer separation of fine material from coarse material. Increased output with lower power cost. In sizes 3 to 16 feet in diameter. Bulletin No. 087.
296C Sturtevant Mill Co.

Separators, Centrifugal.... Centrifugal Separation Guide describes product—how it operates, the separations it accomplishes, its application in processing. Complete with numerous illustrations. Bulletin 5153.
296D Merco Centrifugal Co.

Separators, Centrifugal.....Furnishes upon request the "Merco Capacity Calculator"—a fast method to approximate the size Merco centrifuge required in your process. Describes Merco Rental Plan. Form 5409.
296E Merco Centrifugal Co.

Separators, Flotation.....Describes line of flotation separators: for pollution control—water conservation—by-product recovery—solids-liquids separation. Covers application, operating principle, design, etc.
296F Pacific Industrial Engrg.

Separators, Vibrating Screen.....New tangential discharge spouts replace rectangular shape spouts on SWECO vibrating screen separator. Complete information on new design contained in company's Data File No. 107-32.
296G Southwestern Engrg. Co.

Settling & Filter Systems.....Provides information on the De'park settl'ng and filter system . . . for continuous removal of chips, heavy solids and fine solids to .004" screening.
296H Industrial Filtration Co.

Shot Peening.....Shows possibilities of shot peening for the manufacture of flexing parts under stress. Covers factors responsible for successful shot peening & methods of assuring these factors. Bulletin No. 2144.
296I Pangborn Corp.

Sifters.....By utilizing stacked decks, these space-saving units provide screening area equal to that of a single deck screen requiring four times the floor space. Other advantages in Bulletin No. 06B-7625A.
296J Allis-Chalmers Mfg. Co.

Sifters, Gyrator.....Sift all types of ground material . . . spices, drugs, herbs, chemicals, etc. Covers information on construction, operating directions & specifications. Illustrated.
296K Schutz-O'Neill Co.

Slakers, Lime.....Describes continuous milk-of-lime process & shows general arrangement & dimensions of various size slaking systems including a Hydro-Classifier in series with the lime slaker. Bulletin No. 50.
296L Hardinge Co.

Softeners, Hot Process.....Manufactures hot process softeners of all types, including sludge blanket or down-flow designs. Methods and application fully described in Publication No. 3000.
296M Cochrane Corp.

Softeners, Water.....Provides valuable details on the Hydro-Softener. Includes a description of the unit, its operation, advantages, applications, sizes and capacities, etc., in illustrated Bulletin No. 4083.
296N Dorr-Oliver.

Softeners, Zeolite.....Used for boiler feed in high & low pressure boilers, & in all industries requiring soft water. Covers sodium zeolite & hydrogen zeolite softeners in descriptive Publications Nos. 4520-B & 4530.
296O Cochrane Corp.

Sterli-Aqua Systems.....Offer a simple, efficient, rapid method of converting ordinary boiler steam into sterile, pyrogen-free water of exceptional quality. Full details in illustrated Bulletin No. SC-1048.
296P Selas Corp. of America.

Stills, Water.....Provides complete information & specifications on steam heated stills up to 250 gallons per hour; electrically heated type up to 10 gallons per hour; gas heated, up to 50 gallons per hour.
296Q Consolidated Mach. Corp.

Strainers.....Describes high & low pressure strainers for oil, water, steam & chemicals. Contains 16 p. of dimension & sizing charts, sectional drawings & informative data on 15 types. Request Bulletin No. 9-S.
296R Schutte & Koerting Co.

Strainers, Self-Cleaning.....For protection of process equipment, turbines, regulators, valves. Covers data on uses, strainer screens, specifications, dimensions, ordering, etc. in illustrated Bulletin No. 5308.
296S Leslie Co.

Support Plates.....The wier-type support plate improves performance of any dumped tower packing. In every size from 12" diameter up to 60" diameter . . . has better than 50% free area. Bulletin upon request.
296T U. S. Stoneware Co.

Syphons, Steam Jet.....Covers application, construction, operation & performance of Jet Syphons which utilize pressure energy of steam or air to pump, heat & mix liquids, gases & slurries. 24 p. Bulletin 2-A.
296U Schutte & Koerting Co.

Tables, Concentration.....Separate materials into bands & handle coarsest sands with excellent results. Ideal for separation of groups of particles having similar range of specific gravities. Bulletin T1-B3.
296V Denver Equipment Co.

Thickeners, Spiral Rake.....Simple mechanical rake and settling unit for the separation of solids from liquid is subject of a new, detailed Bulletin. Valuable features, drawings, photographs, etc. No. T5-B5.
296W Denver Equipment Co.

Trays, Bubble.....Glitsch "Truss-Type" bubble trays serve all processing plants . . . chemical—petro-chemical—natural gasoline—petroleum refining—A E C—etc. For details, request Technical Bulletin.
296X Fritz W. Glitsch & Sons.

Trays, Fractionating.....Covers general experience and background, mechanical details, process features, advantages of low cost, application in a French refinery, etc., in fully illustrated Bulletin No. 10-M.
296Y Badger Mfg. Co.

*From advt., this issue

CHEMICAL PROCESSING EQUIPMENT
FOR PILOT PLANT OR PRODUCTION

Steam Jacketed Stainless Steel Kettle — Double Motion Agitators

DESIGNED, ENGINEERED AND BUILT
. . . to your requirements

Our broad and diversified experience in the fabrication of both standard and special processing equipment for a variety of industries equips us to provide intimate and comprehensive services to help you solve your pilot plant or production equipment problems with the most efficient and economical designs and materials.

•

Cream City engineers will willingly assist you in the selection of standard or custom built equipment for your specific requirements.

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Write or wire for the name and address of our nearest representative.

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STORAGE TANKS • AGITATOR KETTLES
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STAINLESS STEEL • NICKEL • STAINLESS AND NICKEL CLAD • MONEL • INCONEL
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Vacuum Systems, Industrial.....Powerful suction of the Hoffman system is the perfect supplement to regular ventilating-collecting installations for 100% effective control of dust & dry material. Detailed Booklet.
297A U. S. Hoffman Machy. Corp.

Vessels.....If your process involves high pressures, high temperatures or corrosive materials, design with Multilayer. Request "Multi-Layer Manufacturing & Assembling" & "Multi-Layer Engineering for Safety."
297B A. O. Smith Corp.

Vessels, Processing.....Illustrates and describes the different operations and conditions for which these vessels are made, and describes the 4 different ways in which company operates, in fully detailed Folder.
297C Bethlehem Foundry & Mach.

Washers, Pulp.....Data on Swenson recovery equipment for pulp mills—illustration, description and discussion of pulp washers, explaining the advantages of advanced engineering features. Bulletin No. E-108.
297D Swenson Evaporator Co.

Washers, Screw.....Offers Bulletin on cleaning, dewatering, classifying sand and other coarse or fine materials—with single or double screw washers. Includes data on models, capacities, sizes, etc.
297E McLanahan & Stone Corp.

Water Softeners.....One operation, rapid Zeolite water softeners. Completely automatic, semi-automatic or manual controls. Company announces the availability of descriptive literature—Bulletin No. 211.
287g **Industrial Filter & Pump

Welding & Cutting Equipment.....52 p. covers Airco gases, welding and cutting equipment and accessories. Explains how each item operates and the jobs to which it is best suited. Illustrated Catalog ADC-662B.
297F Air Reduction Sales Co.

Wheels, Grinding.....28 p. Catalog describes reinforced resinoid line of grinding wheels. Included are typical application photos, tables of wheel sizes, prices, operating speeds & other data. No. 1748.
297G Norton Co.

Wire Cloth.....Produces standard replacement or custom-designed filter leaves or units, strainers, screens, trays, baskets, cylinders, semi- or complete process apparatus, of any desired metal. Catalog 50.
311a *Multi-Metal Wire Cloth Co.

Wire Cloth.....84 p. catalog describes company's facilities for fabricating wire cloth parts. Includes wire cloth parts for screening, filtering and special uses. Also provides helpful metallurgical information.
297H Cambridge Wire Cloth Co.

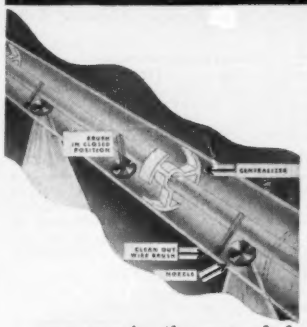
Wire Cloth.....Newark metallic filter cloth is available in a variety of weaves in all malleable metals, and is adaptable to practically all types of filters. Offers complete details in company's Catalog E.
281 *Newark Wire Cloth Co.

Pumps, Blowers, Compressors

Blowers.....Complete details on Boltaron 6200 non-plasticized polyvinyl chloride industrial blowers . . . for expelling corrosive air, fumes & gases. Includes features & mechanical specifications. Fully illustrated.
297I Industrial Plastic Fab.

Blowers.....Company announces the availability of a bulletin which describes in detail their Turbo-Pressure blower line. Includes information on uses, characteristics, specifications. Bulletin CTB-103.
297J Chicago Blower Corp.

TWO TO GROW ON



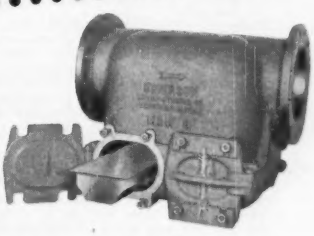
1 EMERSON SHOWER PIPES

For spray washing, spray coating, cooling, humidifying and for other uses in product processing Emerson Shower Pipes are proving their efficiency and economy.

Use the coupon below for our technical bulletin on Emerson Shower Pipes.

This illustrated bulletin contains full description of the mechanical operating features of shower pipes, including complete information on nozzles, clean-out brushes, the patented flush valve and other components. It shows how you can practice economy in the use of fresh or re-circulated liquid in your spray washing, cooling or humidifying operations.

Also included are charts indicating capacities of different size spray nozzles at various pressures; and the length of sprayed surfaces with relation to pipe sizes and materials used in construction.



2 EMERSON MAGNETIC TRAPS, SEPARATORS, PLATES

For protection of vital machinery, for purification of raw and processed materials by the removal of burrs, filings and all other metallic foreign elements, installations of Emerson Magnetic Separation equipment in your flow lines adds to your maintenance economy and your production quality.

Send for our technical bulletin on Emerson Magnetic Separation.

It gives you, fully illustrated, complete information on magnetic plates for installation in pipes, ducts, lines, flow boxes, head boxes, belts, conveyors, troughs and machines. It also includes facts on plate construction and materials used, dimensions of all plates, their use and care.

Detailed information on the complete separation units — Emerson Magnetic Separators, for normal requirements — Emerson Magnetic Traps, for severe requirements — is also contained. This includes full description of what they are, how they are made and how they perform, with illustrations showing design features and dimensions.

THE EMERSON MANUFACTURING CO., Dept. 1-HR
Division of John W. BOLTON & Sons, Inc.
Lawrence, Mass.

Please send me technical bulletin on

◯ Shower Pipes

◯ Magnetic Separation Equipment

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THE EMERSON MANUFACTURING CO.
Division of John W. BOLTON & Sons, Inc.
LAWRENCE, MASSACHUSETTS, U. S. A.

Pumps, Blowers, Compressors

Blowers—Fans

Blowers.....Precision manufactured to move more gas or air with less wear than other blowers of equal size or weight . . . and with less maintenance and power costs. Describes blowers in detailed Bulletin B-154.
253 *Read Standard Corp.

Blowers.....Complete dimensions, specifications & performance data on new non-overloading utility blowers with backward curved blades is presented in concise, easy-to-use form in new Bulletin, No. BC-11.
298A Hartzell Propeller Fan Co.

Blowers, Centrifugal.....Rugged castings, husky, perfectly balanced rotor & externally mounted, cylindrically seated bearings are design features that reduce maintenance & insure long service. Bulletin No. 0500.
298B De Laval Steam Turbine Co.

Blowers, Motor.....Describes blowers in 2 series up to 4" static pressure. Available in 1, 2 & 3 fan assemblies. Applicable to ventilating, drying, air conditioning. For details, request Bulletin No. 89.
273e *Niagara Blower Co.

Blowers, Rotary Positive.....Describes Miehle-Dexter Rotary-blowers . . . for all industrial products & processes—pressure or suction. Includes performance data & engineering specifications. Bulletin No. 255.
298C Miehle-Dexter Supercharger.

Calculators, Vacuum.....Company presents device designed for rapid slide-rule calculations. Includes a standard ABCD log scale. Helps to determine the proper pump to be installed for a specific process.
298D F. J. Stokes Mach. Co.

Compressors.....Literature on latest developments in mechanical scavenging of 2-cycle engines by rotary blower. Performance charts diagram resulting increase in engine power and fuel savings. 22 p. Bulletin 75.
298E Cooper-Bessemer Corp.

Compressors.....Small, compact compressors feature 15 to 125 hp.; 81 to 641 cfm; pressures to 125 psi, standard. (high pressure units to 250 psi); forced-feed lubrication; etc. Full details in Bulletin No. A-56C.
129d *Joy Mfg. Co.

Compressors.....Illustrated, 22 p. covers valuable information on company's new turbocharged, two-cycle, right angle, gas-engine-driven compressors. Three sizes: 2000 bhp, 2350 bhp, 3300 bhp. Bulletin 134.
298F Clark Bros. Co.

Compressors.....Booklet provides essential information covering company's line of Class ATH horizontal, double-acting, heavy-duty water-cooled air and gas compressors. Request 6 p. illustrated Bulletin No. 601.
298G Pa. Pump & Compressor Co.

Compressors.....Gas-engine-driven compressors in 330 to 550 hp range are the subject of a new 44 p. bulletin. Describes all the features of Type SVG four-cycle compressors. Request illustrated Form No. 3128-A.
298H Ingersoll-Rand Co.

Compressors.....For heavy duty service. Offers high overall efficiency, long life with minimum maintenance; smooth quiet operation, accessibility and simplicity, compactness and ease of installation. Bulletin No. 766.
298I Chicago Pneumatic Tool Co.

Compressors.....Reversible ring plate valves, force feed lubrication, sealing type piston rings, generous intercooler coils are features which make for efficiency and long-term economy. Descriptive Catalog.
298J Norwalk Co.

*From advt., this issue

Compressors, Air.....Fully illustrated, 32 p. describes Class WN-112, heavy-duty, V-vertical design—368 to 1948 cfm, pressures to 125 psi. Includes design & construction features. Bulletin No. A-62C.
129b *Joy Mfg. Co.

Compressors, Air.....Illustrated, 8 p. describes industrial air compressors—Class WG-9, heavy-duty, vertical design . . . 172 to 881 cfm, 30 to 150 psi. Includes features and design. Bulletin No. A-43C.
129c *Joy Mfg. Co.

Compressors, Air.....Describes Class WN-114, heavy-duty, semi-radial design—1186 to 8800 cfm, pressures to 500 psi. Includes features, construction, specifications, etc. Illustrated, 34 p. Bulletin No. A-72C.
129i *Joy Mfg. Co.

Compressors, Balanced/Opposed..... Complete line of balanced/opposed compressors in 150 to 4500 hp range is available in various cylinder arrangements to meet practically any requirement. Bulletin No. 118.
298K Clark Bros. Co.

Compressors, Balanced/Opposed..... Illustrated, 36 p. describes 300-10,000 hp balanced/opposed compressors—basic principles; drive; design; running gear; lubrication; capabilities; etc. Bulletin 679-B1.
298L Worthington Corp.

Compressors, Carbon Piston.....Quality leader in compressor, pumps & rock drills for construction, mining, petroleum & general industry features the dependable CRX carbon piston compressor. Bulletin CRC-10.
298M Gardner-Denver Co.

Compressors, Centrifugal.....Extremely simple in design and construction . . . serving in processes requiring the handling and compression of large quantities of air or gas. Covers details and specifications.
298N Elliott Co.

Compressors, Centrifugal.....Offers a complete line of centrifugals for gas compression and refrigeration—up to 10,000 horsepower in a single unit. Details in "Centrifugal Compressors for Industry."
298O Carrier Corp.

Compressors, Gas, Packaged.....Illustrated, 8 p. describes gas booster compressors for wide variety of pressures & displacements. Includes superior features for long, trouble-free service. Bulletin A-94C.
129e *Joy Mfg. Co.

Compressors, Oil-Free.....For pressure-testing of food containers, oil-free ejection of metal stampings, paint spraying and general oil-free processing service. Contains complete details in Bulletin No. A-92C.
129a *Joy Mfg. Co.

Compressors, Oil-Free.....Offer space-saving design, excellent service, economical operation, etc. Company builds regular and oil-free compressors to meet any capacity and pressure need. Bulletin No. A-44C.
129h *Joy Mfg. Co.

Compressors & Pumps.....Illustrated Bulletin covers operation & construction of single-stage water-cooled rotary compressors & vacuum pumps applicable to every air or gas handling requirement. 12 p. No. 16B8126.
298I' Allis-Chalmers Mfg. Co.

→Want more information on any of these items? Just write its code number on one of the postcards inside the back cover, then mail it to us. It's that easy now.

Compressors, Reciprocating.....Capacity tables, specifications & information on operating features for compressors & condensing units with capacities ranging from 10 to 100 tons. Details in Bulletin No. DS-361.
298Q Trane Co.

Compressors, Rotary.....Operate with minimum maintenance cost. Built in single & two-stage units for capacities to 3300 cfm, pressures to 125 lbs. Full description of these modern machines in Bulletin No. C-5A.
298R Fuller Co.

Exhausters.....Fully illustrated, 6 p. furnishes pertinent information on corrosion-resistant exhausters for handling gases & fumes. Includes complete data on capacities & chemical resistance table. Bulletin 87.
298S Haveg Corp.

Exhausters, Rubber-Lined....."Buffalo" rubber-lined exhausters last from 3 to 12 times longer than ordinary metal fans handling fumes containing corrosive materials. Furnishes details in Bulletin No. 2424-F.
298T Buffalo Forge Co.

Fans.....General ventilation—exhaust—air conditioning supply. For stable, quiet performance on large capacity work, choose the "Buffalo" Type BL Limit-Load ventilating fan. Data in Bulletin No. F-100.
298U Buffalo Forge Co.

Fans.....American Blower fans are used extensively for forced and induced draft, ventilating, air conditioning, drying, fume removal, and processing systems. Offers literature on complete line of products.
298V American Blower Corp.

Fans.....Exceptional fan equipment for industrial air & material handling features: high efficiency; rugged, tight construction; 3 interchangeable wheels—each with radial blades; etc. Illustrated Bulletin 702.
298W Clarage Fan Co.

Fans.....Company furnishes new literature containing detailed specifications, performance charts, dimension tables, etc. regarding their line of "MD" fans. Complete information in Bulletin No. MD-101.
298X Chicago Blower Corp.

Fans.....Aeromaster fans are precision engineered, adapted from high speed aircraft propellers. Have adjustable blade pitch & anti-flutter design . . . require less horsepower. Offers fully detailed information.
298Y Koppers Co.

Fans.....Backward curve unit designed to give quiet, high efficient, stable operation through a wide performance range with the protection of absolute non-overloading characteristics. Data in 4 p. Bulletin No. 2500.
298Z Robinson Ventilating Co.

Fans.....Feature forwardly-curved bladings specifically designed for induced draft application in steam plants of public utilities & industrial plants for both process steam & power generation. 8 p. Catalog 1380.
298AA Westinghouse Sturtevant Div.

Fans.....Describes cooling tower & heat exchanger fans. Includes: visual index; adjustable-pitch fans—14' to 22'; 10' to 14' adjustable-pitch fans with Hartzite plastic blades; etc. Illustrated Bulletin A-111A.
298BB Hartzell Propeller Fan Co.

Fans.....New, illustrated 28 p. book furnishes tables for rapid, accurate selection of industrial fans for required capacities. Includes complete descriptive information, dimensional data, etc. Bulletin No. EX-531.
298CC Bayley Blower Co.

Fans.....Versatile fan for jobs up to 20,000 cfm, with quality features—inlet guide vanes, curved blades, properly shaped housing & Limit-Load characteristic—for superior performance. Bulletin No. 3720.
298DD Buffalo Forge Co.

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Series H DURCOPUMPS are all new, heavy duty chemical pumps. With a large, rugged shaft, heavy bearings, open or closed impeller and new features of adaptability, these pumps provide long, dependable pumping life with easy, low-cost maintenance. Designed for high heads and low capacities as well as for routine conditions, Series H Durcopumps can provide the answer to your tough pumping problems.

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THE DURIRON COMPANY, Inc. / Dayton, Ohio

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Pumps, Blowers, Compressors

Fans, cont.—Pumps, Centrifugal Chemical

Fans.....Clarage V-belt "Ready Units" answer economically your smaller air handling requirements. Ready to run, with fan, motor, and drive in one compact, easily installed assembly. Details in 28 p. Catalog 515.
300A Clarage Fan Co.

Fans.....Exhaust hot, corrosive & explosive fumes the direct way, with no directional change in air stream to cause pressure losses. Bulletin DB-4-52 & "Design Data for Exhaust Systems" sent upon request.
300B American Mach. & Metals.

Fans, Axial.....Presents to industry a most complete line of axial fans featuring the utmost in efficiency and performance. Specifications, capacities, performance curves, etc. in illustrated, 32 p. Bulletin 103-A.
300C International Engrg.

Fans & Boosters.....Describes line of stack fans & duct boosters. Includes information regarding advantages, applications, details of construction, dimensions, capacities, etc. in 16 p. illustrated Bulletin No. 109-A.
300D International Engrg.

Fans, Exhaust.....Introduces a complete new line of corrosion-resisting exhaust fans. Offers pertinent data covering construction, dimensions, weights, and performance characteristics, in Bulletin No. F/1.
300E Duriron Co.

Fans, Vaneaxial.....The "Buffalo" Type B Vaneaxial fans feature excellent results in high and low temperature applications, fume and vapor exhaust, air conditioning supply. Request Bulletin No. 3533 for details.
300F Buffalo Forge Co.

Fans, Vaneaxial.....Illustrated, 16 p. describes Series 1000 Axivane adjustable blade, vaneaxial fans for commercial & industrial applications. Covers design, features, specifications, etc. Bulletin No. J-611C.
129f *Joy Mfg. Co.

Pumps.....Covers two-stage, opposed impeller pumps for clear liquids. Five sizes. Capacities to 1200 gpm. Heads to 1000 ft. Specifications, interchangeability tables, performance curves, etc. Bulletin 722.6.
300G Goulds Pumps.

Pumps.....Announces the publication of an illustrated catalog sheet which describes the operation and advantages of the Hypro G3800 gasoline engine powered pump. Includes data on uses and specifications.
300H Hypro Engrg.

Pumps.....Guide to pump selection—big illustrations & brief descriptions with capacities & adaptability of pumps contained in literature to help avoid costly mis-application. Request Bulletin No. S-146.
300I Taber Pump Co.

Pumps.....Describes the new Aldrich air driven hydraulic pump. Includes information on design, installation & operation, & is illustrated by photographs & sectional & dimensional drawings. Data Sheet No. 36.
300J Aldrich Pump Co.

Pumps.....Covers Warren Cradle Mounted Compacunits. Includes basic design & construction features, sectional & external views, composite dimensions, material specifications, & other details. Bulletin 247.
300K Warren Steam Pump Co.

Pumps.....Pump liquids—gases—slurries . . . without corrosion or contamination. Wavelike motion of steel fingers forces material through tubing. Makes available a descriptive Catalog containing full details.
300L Sigmamotor, Inc.

Pumps.....4 p. Folder describes the Vanton line of Buna "N" and natural hard rubber pumps, valves, pipe and fittings. Also included are tables, charts and other technical data required for proper selection.
196o *Cooper Alloy Corp.

Pumps.....Worthite product line offers solution for pumping problems which involve corrosive fluids. For complete information on these rugged units, company makes available upon request Bulletin W-350-B16.
300M Worthington Corp.

Pumps.....Describes the new features of line of Rotorarm pumps—new pumping principle . . . new use of corrosion-resistant alloys . . . new uses for special jobs. Includes performance characteristics. Illustrated.
300N Hinckley Corp.

Pumps.....Oil-lubricated pumps offer simple design, yet have all features required for low cost, low maintenance operation at high temperatures. Details of design and construction features in Bulletin 52B7638.
300O Allis-Chalmers Mfg. Co.

Pumps.....You can depend on Frederick SSV pumps for efficient, carefree service for chemicals, oils, juices, clear liquids, acids, white water, slurries, etc. Features and construction in Bulletin No. 107.
271 *Frederick Iron & Steel

Pumps.....Series H Durcopumps designed to solve your tough pumping problems, & to meet your own special requirements. Built for high heads & low capacities, as well as routine transfer services. Bulletin P/8.
299 *Duriron Co.

Pumps.....Information on the number of rings, depth of box, type of packing . . . chemical & physical properties of fluid being pumped, speed of shaft, & other usable facts, in Pump Bulletin No. S-147.
300P Taber Pump Co.

Pumps.....Describes "flex-i-liner" XB line for pumping corrosive chemicals & abrasive slurries under severe service conditions. Includes design information, capacity chart. Maintenance hints, etc. Illustrated.
300Q Vanton Pump & Equipment.

Pumps.....Handle most anything that can pass thru a pipe, from free-flowing liquids to non-pourable pastes—even materials containing relatively large particles or abrasives. Moyno Pump Bulletin No. 30C.
300R Robbins & Myers.

Pumps.....Issues Bulletin on series of pressure balanced oil hydraulic gear type pumps designed for heavy-duty machine tools, materials handling, earth moving & other mobile equipment. Illustrated. No. 142.
300S New York Air Brake Co.

Pumps.....Full hydraulic balance... Dual-Vane construction provides and assures increased efficiency at higher pressures while reducing wear to the absolute minimum. Details in illustrated Bulletin DP-302.
300T New York Air Brake Co.

Pumps.....For automatically controlled delivery . . . pumps can handle any free-flowing liquid at discharge pressures from 300 to 15,000 psi & are available in 6 sizes—2"-6" stroke & 5-125 bhp. Data Sheet 65.
300U Aldrich Pump Co.

Pumps.....Specially built for handling chemical solutions, efficiently and economically . . . in the processing industries. Describes vertical pumps in Bulletin No. V-837 and horizontal pumps in Bulletin No. C-355.
300V Taber Pump Co.

Pumps, Acid.....Mighty midget for pumping acids. Jabsco neoprene-impeller pump made of Ace hard rubber outlasts, out-pumps anything in its pressure, size and price class. Full details in Bulletin No. 97.
300W American Hard Rubber Co.

Pumps, Acid.....On most difficult pumping jobs . . . dependable, highly efficient pumps deliver continuous, trouble-free performance on 'round-the-clock schedules wherever they are installed. Full Details.
300X A. R. Wilfley & Sons.

Pumps, Air-Engine.....Describes double-acting air-engine pumps—compact, lightweight hydraulic pumps for many applications: for hydrostatic testing; as a hydraulic pumping unit; etc. Bulletin No. A-5.
173e *Watson-Stillman Fittings

Pumps, Boiler Feed.....Used throughout industry for numerous services. Capacities range up to 2000 gpm, pressures to 1,200 psig, temperatures to 350F. Contains complete information in Catalog No. 1502.
300Y De Laval Steam Turbine Co.

Pumps, Boiler Feed.....For boiler feed and other clear water service against high pressures. In two and four stages to handle up to 500 psi. Capacities up to 900 gpm. Find complete information in Bulletin No. 980.
300Z Buffalo Pumps.

Pumps, Centrifugal.....Hydrodynamically sealed pumps without stuffing box—for handling abrasive and corrosive liquids...liquids which must not be mixed with sealing water . . . etc. Illustrated Catalogue Z 3011 B.
300AA Jonkopings Mekaniska.

Pumps, Centrifugal.....Lawrence pumps handle every fluid that can be pumped . . . corrosive, abrasive, hot (1500°F) or cold (—347°F). Full summary of acid and chemical pump data in Bulletin No. 203-7.
45 *Lawrence Pumps.

Pumps, Centrifugal.....Furnishes Bulletin on saddle mounted, vertically split centrifugal pumps...designed for continuous duty in all boiler circulation & heater drain services. Illustrated. No. W-341-B11B.
300BB Worthington Corp.

Pumps, Centrifugal.....A vertical split case pump with balanced loading of impeller & bearings . . . capable of handling loads far in excess of those produced by any pump & motor combination. Complete data.
300CC Bell & Gossett Co.

Pumps, Centrifugal.....Specially designed rubber lined pumps for corrosion & abrasion resistance. Only a cutaway model can show the many features that spell long life & low maintenance. Bulletin 300.
287d *Industrial Filter & Pump

Pumps, Centrifugal.....Erosion and corrosion resistance of high strength, fully glazed porcelain is combined with ruggedness of heavy cast iron armor. Includes valuable engineering data, diagrams, photographs, etc.
300DD General Ceramics Corp.

Pumps, Centrifugal.....8 p. Bulletin describes line of vulcanized-rubber-lined centrifugal pumps & stainless steel & cast steel centrifugal pumps. Includes performance curves, design & construction features, etc.
300EE Industrial Filter & Pump.

Pumps, Centrifugal.....Furnishes Bulletin describing the new end suction centrifugal pump. Includes materials of construction, features of design, performance tables, dimensions, etc. Illustrated, 12 p. No. 4011.
300FF Deming Co.

Pumps, Centrifugal.....Fully covers line of self-priming centrifugal pumps. Includes data on applications in chemical & process industries, in paper mills, on construction work, in mines, etc. Request Bulletin 210-2.
300GG Lawrence Pumps.

Pumps, Centrifugal.....Original manufacturer of self-priming centrifugal pump offers data on new Type CG LaBour—operates under positive or negative suction lift conditions as required. Request Bulletin G-1.
300HH LaBour Co.

*From advt., this issue

Pumps, Centrifugal.....Furnishes information on a new line of corrosion-resistant plastic centrifugal pumps. Includes details on special features, capacities, dimensions, applications, etc. Fully illustrated.
301A Protective Plastics.

Pumps, Centrifugal.....Designed for efficient liquid transmission & low cost maintenance, pumps offer many exclusive features. Furnishes engineering data on all types of pump applications in Catalog No. 253.
301B Tri-Clover Div.

Pumps, Centrifugal.....On job after job, 80-gpm centrifugal pump earns highest praise. Hard rubber casing & impeller, Hastelloy C shaft. Handles nearly all corrosives. Complete details in Bulletin No. CE-55.
301C American Hard Rubber Co.

Pumps, Centrifugal.....Specially built centrifugal pumps are used to handle abrasive & corrosive sludges, slimes & slurries. They give maximum pumping service for years. Descriptive Bulletins available on request.
301D McNally Pittsburg Mfg. Corp.

Pumps, Centrifugal.....Profusely illustrated, 6 p. describes the mechanical features, types and sizes, materials of construction, applications, and advantages of corrosion-resistant chemical pumps. Bulletin No. 310.
301E Dorr-Oliver.

Pumps, Centrifugal.....Help solve problems which involve pumping a liquefied gas at extreme low temperature. Company offers descriptive Bulletin containing summary of acid & chemical pump data. No. 203-6.
301F Lawrence Pumps.

Pumps, Centrifugal.....Describes self-priming centrifugal pumps—specifications, applications, sizes of various types. Frame mounted, capacities to 550 gpm, heads to 140 ft., etc. Bulletin No. W-395-B2.
301G Worthington Corp.

Pumps, Centrifugal.....Meet strict process requirements . . . with Eastern centrifugal pumps. New catalog contains engineering data, performance charts, diagrams & helpful general information. Bulletin 110A.
301H Eastern Industries.

Pumps, Centrifugal.....Furnishes information on company line of packingless self-priming centrifugal pumps, horizontal self-priming centrifugal pumps, non-priming pumps, etc., in fully illustrated Bulletin 54.
301I LaBour Co.

Pumps, Centrifugal.....Feature numerous advantages: good corrosion-resistance; low capital investment; no metal-to-metal contact; high efficiency; constant rate of flow; etc. Full details in Bulletin No. P-3a.
301J Ampco Metals.

Pumps, Centrifugal.....Describes line of Impervite impervious graphite centrifugal pumps...with new exclusive seal design—advantages, performance, construction, dimensions, etc. Illustrated Bulletin 854.
295d *Falls Industries.

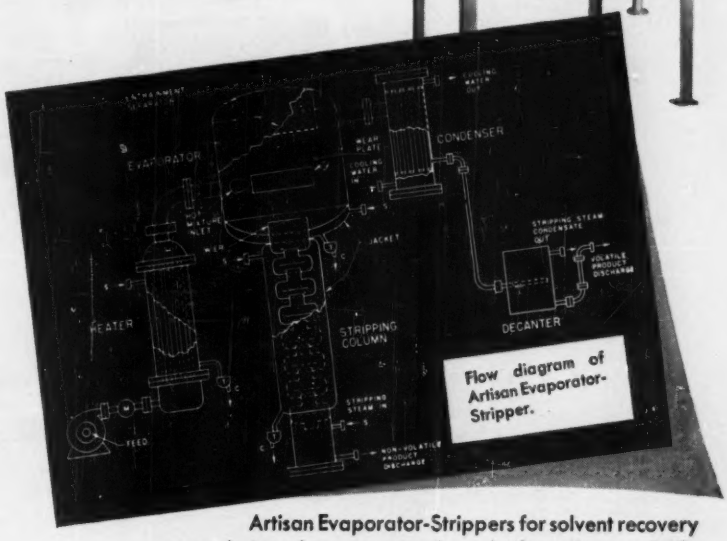
Pumps, Centrifugal . . . . . Impervious graphite pumps feature mechanical seal with enclosed coolant, rugged type SN armored connections, interchangeable parts, wide capacity range, etc. Catalog Section S-7250.
301K National Carbon Co.

Pumps, Centrifugal.....Describes new line of centrifugal pumps designed especially for handling corrosive liquids and slurries. Complete information, including performance data, found in Bulletin No. 725.4.
301L Goulds Pumps.

Pumps, Centrifugal Chemical.....Worthington offers you the widest standard corrosion-resistant pump line as Karbate impervious graphite supplements Worthite. Request Bulletins Nos. W-350-B14A and W-350-B-18.
301M Worthington Corp.

Artisan

CONTINUOUS COMBINED EVAPORATOR-STRIPPERS



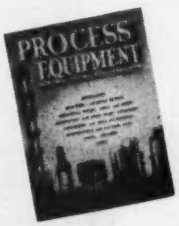
Flow diagram of Artisan Evaporator-Stripper.

Artisan Evaporator-Strippers for solvent recovery are designed to separate the volatile and non-volatile components of a liquid mixture — continuously and with high efficiency. Partial separation takes place in the evaporator and complete separation in the stripper. (See diagram.)

Every Artisan Evaporator-Stripper is custom-designed to fit the physical properties of the two liquids. They can be supplied in a wide range of sizes to handle anywhere from 25 to 1000 gallons per hour. Operation of the system is from atmospheric pressure to 29 inches of vacuum, depending on the characteristics of the liquids to be separated. Either manual or automatic control is available.

While Artisan Evaporator-Strippers are primarily used for solvent recovery, they have a much wider field of application and in many instances will eliminate the need for elaborate fractionation equipment.

If your problem involves the separation of two liquids, write us the pertinent details. No obligation.



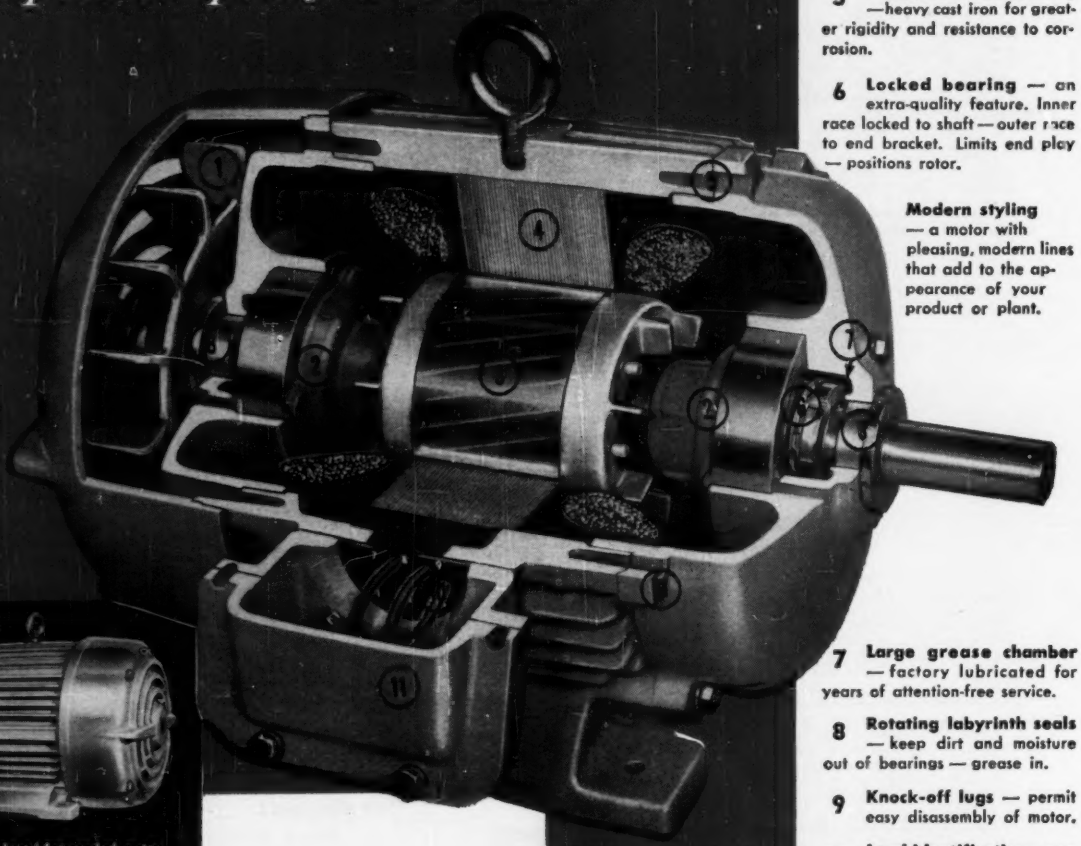
Write for our bulletin PROCESS EQUIPMENT.

Artisan METAL PRODUCTS, INC.
73 Pond Street, Waltham, Mass.

Here's the inside story of

the NEW L.A. *Line*

...your BEST enclosed and explosion-proof motor BUY



1 Fan — efficient, non-sparking fan. New aerodynamic design for more effective cooling.

2 Inner bearing cartridges — lock bearings to end bracket and form explosion-quenching seal along shaft.

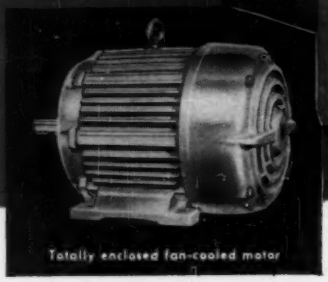
3 Indestructable cast-aluminum rotor—dynamically balanced with fan for smooth, quiet operation.

4 Stator — prewound stator core utilizes Formvar wire insulated with a new Alkyd Asphalt Resin insulating varnish.

5 End bracket and housing —heavy cast iron for greater rigidity and resistance to corrosion.

6 Locked bearing — an extra-quality feature. Inner race locked to shaft — outer race to end bracket. Limits end play — positions rotor.

Modern styling — a motor with pleasing, modern lines that add to the appearance of your product or plant.



Totally enclosed fan-cooled motor

Cutaway view of explosion-proof motor

7 Large grease chamber — factory lubricated for years of attention-free service.

8 Rotating labyrinth seals — keep dirt and moisture out of bearings — grease in.

9 Knock-off lugs — permit easy disassembly of motor.

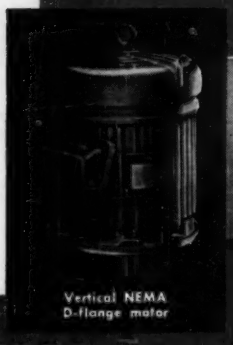
10 Lead identification—permanent, positive lead identification spacer in conduit box.

11 New split conduit box — rugged cast-iron conduit box diagonally split for easy connection.

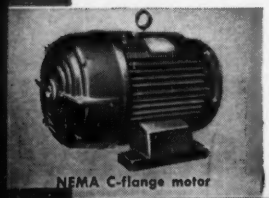
This is the completely new L.A. totally enclosed fan-cooled and explosion-proof motor. Every feature in this new line is designed for easier installation, longer service life, less maintenance and attention. You get the full benefit of the new NEMA standards in a smaller, more functional, completely modern design.

Your nearby Louis Allis Sales Engineer can show you all the reasons why these motors perform better and longer on your tough jobs — why they give you maximum resistance to corrosion wherever you need this extra protection. Call him today.

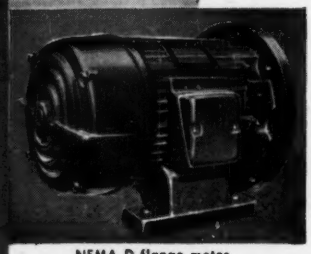
THE LOUIS ALLIS CO.
MILWAUKEE 7, WISCONSIN



Vertical NEMA D-flange motor



NEMA C-flange motor



NEMA D-flange motor

We specialize in SPECIAL MOTORS — *and* PROMPT DELIVERY, TOO

There's a Louis Allis special motor for your toughest application. Whatever electrical or mechanical modifications you need, check first with Louis Allis.

Pumps, Blowers, Compressors

Pumps, Centrifugal Fire—Pumps, Dredge

Pumps, Centrifugal Fire.....Provides informative literature on Fairbanks-Morse fire pumps . . . the most efficient, dependable pumps in the field . . .made by the world's largest manufacturer of pumps.
303A Fairbanks, Morse & Co.

Pumps, Chemical.....Furnishes a complete line of Buffalo pumps, ready to handle corrosive or abrasive liquids at least maintenance cost. For full product information, request illustrated Bulletins 976 and 982.
303B Buffalo Pumps.

Pumps, Chemical.....Data on corrosion-resisting pumps for heavy-duty chemical service. Available in 12 standard alloys to supply heads to 240 ft. & capacities to 2000 gpm. Find information in Catalog No. 54.
303C Duriron Co.

Pumps, Chemical.....Controlled capacity chemical pumps designed to meet the practical requirements of low initial cost, operating and maintenance economy. Details of line and Selection Chart in Bulletin S-1254.
303D Phila Pump & Machy. Co.

Pumps, Chemical.....Specifically engineered for handling acids & other corrosive chemicals. Full information including performance charts, selection table, dimensions & specifications in Bulletin 54-1-640.
303E Byron Jackson Co.

Pumps, Chemical.....Special alloy steel developed for chemical pumps—Ircamet—easily handles a wide range of corrosive solutions . . . from sulfuric acid to caustic soda. For full details, request Bulletin 7095-A.
303F Ingersoll-Rand Co.

Pumps, Close-Coupled.....Feature the "Q" Factor . . . the built-in quality which provides trouble-free satisfaction and long life. Offers complete description of Class CCL close-coupled pumps in Bulletin 957-D.
303G Buffalo Pumps.

Pumps, Constant Stroke.....For medium to high pressure service...make use of one of the numerous Aldrich constant stroke pumps—the direct flow Triplex or Multiplex pump. Details in Data Sheets 64, 64A & 64B.
303H Aldrich Pump Co.

*From advt., this issue

Pumps, Controlled Volume.....New Application Engineering Data Sheet describes the use of controlled volume pumps to proportion caustic soda to vegetable oil flow, thereby assuring proper break. Data Sheet No. B-54-1.
303I Milton Roy Co.

Pumps, Controlled Volume.....Literature includes: Application Engineering. Data Sheet No. A-54-2, "Instrumentation of Continuous Reactor" & Bulletin No. 1053, "Air-Powered Controlled Volume Pumps."
303J Milton Roy Co.

Pumps, Controlled Volume.....Covers use to control low capacity flows in continuous phosphatizing, a process in which a paint-retentive, corrosion-resistant coating is bonded to metal surfaces. Data Sheet No. C-54-1.
303K Milton Roy Co.

Pumps, Controlled Volume.....New Application Engineering Data Sheet describes an automatic control system used on natural gas pipelines to inject odorants into varying natural gas flow. Data Sheet No. E-54-7.
303L Milton Roy Co.

Pumps, Controlled Volume.....Describes the use of controlled volume pumps in solving low capacity flows of papermakers chemicals in stock preparation. Actual installations discussed. Data Sheet F-55-1.
303M Milton Roy Co.

Pumps, Controlled Volume.....Two new 4 p. bulletins describe how leading paper mills employ controlled volume pumps to meter low capacity flows of papermakers chemicals. Request Data Sheets Nos. F-55 & F-55-3.
303N Milton Roy Co.

Pumps, Controlled Volume.....Application Engrg. Data Sheet describes use of controlled volume pumps to meter any small quantities of chemical reagents in both dry & wet processing phases. Data Sheet H-54-2.
303O Milton Roy Co.

Can't remember?

Can't quite recall who built that new plant, who developed that new process? Well, then, take a crack at finding the answer in this issue's Inventory of New Plants & Facilities (p. 7) or Inventory of New Processes & Technology (p. 33).

Pumps, Diaphragm . . . . . Adjustable stroke diaphragm pumps can be adjusted while pump is running to regulate & control flow of thickened pulp. Useful in counter-current decantation circules. Bulletin P8-B7.
303P Denver Equipment Co.

Pumps, Diaphragm.....Makes available pertinent information concerning line of new type diaphragm pumps . . . especially designed for pumping abrasive liquids, petroleum, liquid food products, chemicals, etc.
303Q Perry Co.

Pumps, Diaphragm . . . . . A completely new & modern engineering approach to diaphragm pump design. Wheelbarrow type mounting enables one man to handle on the job. Handles slide alongside. Bulletin No. 55DP.
303R Rice Pump & Mach. Co.

Pumps, Diffusion.....Catalog describes complete line of diffusion pumps. Offers characteristics of each pump, including pumping speeds, operating pressures, blank-off pressures, fore-pressure limits. Illustrated.
71b *Naresco Equipment Corp.

Pumps, Direct Flow.....Latest addition to line—2½" stroke, 25 hp direct flow Aldrich Triplex pump—embodies all famous outstanding features of design & construction—plus low cost. Furnishes Data Sheet 63.
303S Aldrich Pump Co.

Pumps, Double Suction.....Rugged double suction pumps assure long life and low maintenance. Feature heavy-duty construction, wide material choice, unit responsibility, etc. Offers details in Bulletin No. 08B6146.
303T Allis-Chalmers Mfg. Co.

Pumps, Double Suction.....Hydraulically balanced, highly efficient and durable. In sizes to deliver from 10 to 14,000 gpm for circulating, air conditioning, other plant services. Request bulletin No. 995-Q.
303U Buffalo Pumps.

Pumps, Double-Suction . . . . . Describes Type KS double-suction pumps . . . for air conditioning & other general applications. Includes construction features & bearing & stuffing box details. Bulletin No. 08B8233.
303V Allis-Chalmers Mfg. Co.

Pumps, Dredge.....Offer most-wanted features in a dredge pump. Include lowest cost per ton moved, durability, realiability, simplicity, minimum hp, easy maintenance, good vacuum performance, etc. Bulletin 184.
303W Morris Mach. Wks.

For More Information...

You can get—and get fast—your own copy of any item mentioned in this inventory of technical literature by using the Reader Service postcards inside the back cover. Simply write in the item's code number on one of the cards, fill in your name and address, then mail to us. Your bulletins will be sent to you direct by each manufacturer. Use the cards as often as you please during the coming year to build up and keep current your technical files on chemicals, materials, equipment and processes.

Pumps, Blowers, Compressors

Pumps, Flow Control—Pumps, Turbine

Pumps, Flow Control.....New 24 p. reference describes and illustrates the application of flow control pumps to chemical feed and complete instrumentation systems. Full information in Bulletin No. 1253.
304A Milton Roy Co.

Pumps, Gear.....Maintain high efficiency handling corrosive liquids. 32 ssu to 1,000,000 ssu; 1-550 gpm; 250 psi for viscous liquids, 50 psi for water. Direct-connected up to 1800 rpm. Details in Bulletin G-2.
304B Sier-Bath Gear & Pump Co.

Pumps, Gear.....Steam jacketed herringbone gear pumps handle viscous materials of many types, in a wide range of temperatures. Covers data on types, operating ranges, design features, etc., in Bulletin No. 17-A.
304C Schutte & Koerting Co.

Pumps, High Vacuum.....Cites examples of typical vacuum systems using high vacuum pumps and provides solutions to various problems in pump selection, in completely revised product brochure, Catalog No. 700.
304D F. J. Stokes Mach. Co.

Pumps, High Vacuum.....52 p. includes: types of vacuum systems; illustrated specifications and pumping speed curves; mechanical descriptions of high vacuum pumps; engineering section; etc. Catalog No. 425.
193 *Kinney Mfg. Div.

Pumps, High Vacuum.....Mechanical booster pumps (Model KMB) are the most advanced design of mechanical high vacuum pumps for modern high vacuum processes. Offers full details in illustrated Catalog No. 400.
304E Kinney Mfg. Div.

Pumps, Industrial.....New, 108 p. Catalog includes information on construction features, performance & selection tables for the complete industrial pump line. Valuable reference fully illustrated. No. 1-54.
304F Deming Co.

Pumps, Jet.....Covers design, construction, installation & operation of A-S-H Hydro-Ejector—a jet pump designed to pump a mixture of solids & water thru a transporting pipeline. Request Data Sheet Ea.
304G Allen-Sherman-Hoff Co.

Pumps, Liquid.....Pump viscous fluids efficiently and economically . . . and serve as combined meter and pump due to their unusually high volumetric efficiency. Describes the entire line in Bulletin No. L51.
304H Kinney Mfg. Div.

Pumps, Liquid Oxygen.....Specially designed to handle liquid oxygen or nitrogen at temperatures as low as —300°F. Capacities to 300 gpm . . . heads to 3000 ft. For complete details, request Bulletin.
131e *Byron Jackson Co.

Pumps, Multi-Stage.....Single suction multi-stage pumps . . . for handling clear water at high pressures, any temperature. For complete information on the Type "RR" pump request illustrated Bulletin 980-C.
304I Buffalo Pumps.

Pumps, Paper Stock.....For handling high consistency liquids—save money and trouble with non-clogging paper stock pumps. Available in alloys or rubber-lined for corrosive and abrasive liquids. Bulletin No. 953.
304J Buffalo Pumps.

Pumps, Piston-Diaphragm.....For controlled-volume pumping of fluids. Flow-charts, typical applications, description & specifications of models of various capacities & constructions, in Bulletin No. 440.
304K Lapp Insulator Co.

Pumps, Plastic.....Pumps becoming industry's standard for difficult to handle corrosive solutions and abrasive slurries. Unique design eliminates stuffing boxes, shaft seals, gaskets, and check valves. Bulletin VP.
304L Vanton Pump & Equipment.

Pumps, Plastic.....Makes available a 4 p. Folder which describes the complete Vanton "Flex-i-Liner" pump line. Full and cut-a-way views, plus performance charts and material selection hints are included.
196n *Cooper Alloy Crop.

Pumps, Process.....In wide choice of materials . . . to handle many types of abrasive or corrosive material at temperatures up to 250°F. These process pumps feature no leakage. Full details in Bulletin No. 52B6615.
304M Allis-Chalmers Mfg. Co.

Pumps, Process.....De Laval CPO process pumps handle numerous liquids: salt brine; sea water; caustic solution; soap solutions; etc. Capacities to 2000 gpm—heads to 200 ft. Details in Bulletin No. 1125-B.
304N De Laval Steam Turbine Co.

Pumps, Process.....Two-stage SM pumps for pumping fluids over a wide range of pressures & for temperatures up to 800°F. Ideal for pumping hot or cold liquids near their boiling point. Bulletin offers details.
131h *Byron Jackson Co.

Pumps, Propeller.....Releases pamphlet covering line of horizontal mixed & axial flow propeller pumps. Incorporates dimensions, materials table, sectional drawings showing features, etc. Illustrated Form 7280.
304O Ingersoll-Rand Co.

Pumps, Proportioning.....3 pumps in one—7,500, 15,000 or 30,000 psi working pressure made possible by interchange of piston and cylinder assemblies in the same pump frame. Information in Bulletin 4061-A.
304P American Instrument Co.

Pumps, Proportioning.....Describes new type proportioning pump with no packing, unique high speed valves and pulse free flow. Tells what it is, why designed, what it will do, how it works. Bulletin No. AP-54.
304Q Hills-McCanna Co.

Pumps, Proportioning.....Company announces a new chemical proportioning pump . . . more pump for fewer money. Offers information on prices, capacities, and specifications on the new Proportioneers Model No. 1105-KH.
304R Proportioneers, Inc.

Pumps, Rotary.....Feature high suction & rugged construction to unload or transfer high melting point, or low penetration asphalts at cooler temperatures than other rotary pumps. Covers full line in Bulletin L51.
304S Kinney Mfg. Div.

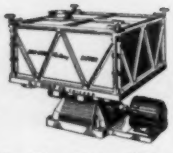
Pumps, Rotary.....Issues a new booklet on bronze rotary pumps with herringbone gears. Reference includes valuable information on diversified applications, specifications and dimensions. Bulletin W-484-B2A.
304T Worthington Corp.

Pumps, Rotary.....Announces the availability of new Roper rotary pump catalog describing product line . . . for manufacturing marine, petroleum, process industries. Request fully illustrated Catalog No. 955.
304U Geo. D. Roper Corp.

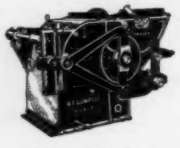
*From advt., this issue

Process dry materials?

CUT PRODUCTION COSTS AND IMPROVE QUALITY CONTROL WITH THESE DEPENDABLE GUMP-BUILT UNITS

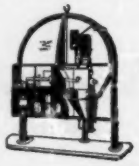


Bar-Nun *Rotary* Sifter



Drayer Feeder

Vibrox Barrel Packer



Bar-Nun Net Weigher

Sifting • Grading

Modern, all-metal Bar-Nun Sifters excel in accuracy of separations, capacity, sanitation, economy. All-mechanical construction. Several sizes and models, for single or multiple separations.

Feeding

Accurate Drayer Feeders regulate the flow of dry materials to production units, or to continuous mixing systems. Over 100 sizes and models.

Packing

Denser packing with Vibrox Packers saves in packing time and container costs. Models for bags, cartons, cans, drums or barrels.

Net Weighing

Gravity and power feed models, in sizes to weigh accurately from ¼ ounce to 50 pounds. Repay their cost through savings in labor and material.

Write for Catalog on Gump Equipment for the Process Industries.

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→Want more information on any of these items? Just write its code number on one of the postcards inside the back cover, then mail it to us. It's that easy now.

Pumps, Rotary.....New fully illustrated catalogs cover rotary pumps for all types of industries. Included are general purpose pumps, heavy duty pumps, Underwater pumps, jacketed pumps, sanitary pumps, etc.
305A Viking Pump Co.

Pumps, Rotary Hand.....Fully illustrated bulletin presents a detailed discussion of the complete line including outstanding performance features, application information and other pertinent data. Bulletin No. 320.
305B Blackmer Pump Co.

Pumps, Rotary Piston.....A self-priming pump that works by displacement system operating with the qualities of a centrifugal pump. Describes type, method of operation and dates, in 6 p., illustrated Bulletin.
305C Neumann & Welchman.

Pumps, Rotary Vacuum.....Superior design, high efficiences and slow operating speeds make the Beach-Russ Type RP pump the best available mechanical pump for your work. Relates the whole story in Catalog No. 90.
305D Beach-Russ Co.

Pumps, Rubber-Lined.....Designed for handling abrasive, fine-mesh material —¼ in. to 325 mesh—sand, taconite, grinding mill discharge, tailings, etc. Features & advantages in illustrated Bulletin No. 52B8156.
305E Allis-Chalmers Mfg. Co.

Pumps, Sand.....Soft rubber lined sand pumps lower pumping costs 30% to 70% due to simple design, lighter weight & accuracy of rubber parts which increase efficiency 1½ to 3 times over other pumps. Bulletin P9-B8.
305F Denver Equipment Co.

Pumps, Sanitary.....Describes new Sani-Flex sanitary pumps...latest in a line of corrosion & contamination-resistant pumps . . . without stuffing boxes or shaft seals . . . for foods, drugs, and pure fluids.
305G Vantom Pump & Equipment.

Pumps, Screw.....Covers Standard Gear-in-Head, High Pressure Long Body Gear-in-Head & Standard Vertical Gear-in-Head types Construction, design, features, dimensions, etc. Bulletins Nos. S-205 & S-206.
305H Warren-Steam Pump Co.

Pumps, Sealless.....Combining motor & pump in a single unit, Chempump is most significant advance in pump design in half a century. Hard-to-handle fluids can't leak or become contaminated. 16 p. Bulletin 1010.
305I Chempump Corp.

Pumps, Slurry.....Slurry pumps handle extremely thick slurries with high specific gravities. Provide long operating life with little or no maintenance. Covers features and selection data in Bulletin 181.
305J Morris Mach. Wks.

Pumps, Submersible.....For well pumping, booster stations, or for standby service. Pump and sealed motor operate completely submerged. No pump house or surface structure needed. Bulletin offers full details.
131k *Byron Jackson Co.

Pumps, Sump.....Three advantages are featured in the "Buffalo" sump pump: easy installation; always in prime (since there is no suction lift); & simplified maintenance. For details, request Bulletin No. 963.
305K Buffalo Pumps.

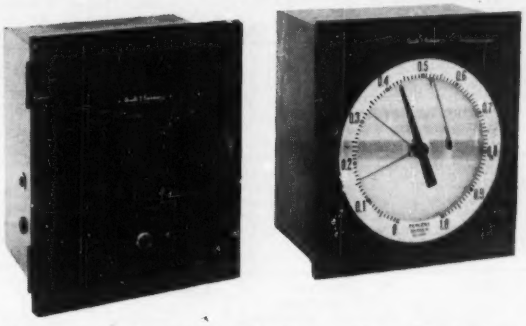
Pumps, Turbine.....Submersible turbine pumps for wells 4" & 6" inside diameter or larger. Reference includes advantages, specifications, illustrations, selection table, etc. Request Bulletin No. 6710-20.
305L Deming Co.

Pumps, Turbine.....A completely new hydraulic and mechanical design is featured in recent additions to the company's industrial vertical turbine pump line. Details in 8 p. "Turbine Pumps for Industry."
305M A. O. Smith Corp.

NEW SAVINGS in your operations

with

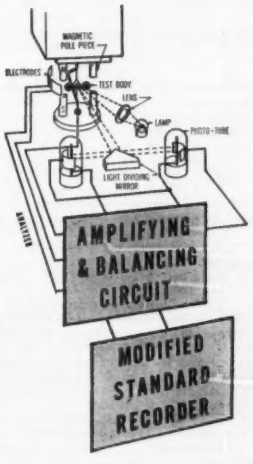
Arnold O. Beckman OXYGEN ANALYZERS



Pictured is the Model G2 Recording Analyzer—finest for precise oxygen measurement.

ON OPERATIONS LIKE THESE...MAKE SAVINGS LIKE THESE

PROCESSING AIR LIQUIFRACTION AND PRODUCTION OF HIGH PURITY GASES	*Better product quality with minimum oxygen or air contamination*
SAFETY PRODUCTION OF HYDROGEN, ACETYLENE, ETC.	*Control explosive atmospheres, reduce fire risks, minimize plant and personnel hazards*
PRODUCT PROTECTION RESIN KETTLES, COLOR PIGMENTS, PRODUCT STORAGE, ETC.	*Reduce oxidation, maintain product standards with controlled purge systems*



Unique Operating Principle

The various applications highlighted above are only a few of the many ways Arnold O. Beckman Oxygen Analyzers—industry's great new profit builders—are being used by progressive operators to boost profits, cut costs.

These are the *only* oxygen analyzers that *continuously* measure process streams by an advanced magnetic principle that provides *direct physical measurement of the oxygen itself*—not of some secondary relationship.

Heart of the unit, as illustrated, is a dumbbell-shaped test body suspended in a magnetic field. Sample gas surrounding this test body causes it to rotate in the field, depending upon the oxygen content of the gas. The movement of a light beam, reflected by a small mirror on the test body, is measured by simple electronic circuits... and the result indicated directly on a conventional recorder or indicator. It's simple, positive, accurate!

No chemicals—filaments—catalysts cams—complicated mechanical parts!

FEATURES OF THE G2

Many ranges: Full scale ranges 0-0.1%, 0-0.5%, 0-1% O_2 and others for low O_2 concentrations. Ranges 90-100%, 95-100% O_2, etc., for high O_2 concentrations.

Multi-Ranges: Any instrument may be supplied with two or more ranges.

***Note:** For ranges wider than 0-3% O_2, ask about the Model F3 Analyzer.*

***Send for Helpful Free Literature** which describes this unique operating principle in detail—explains its many advantages and applications. When writing, outline your particular operations—we'll gladly supply specific information.*

Ask For Data File 15X-105

Arnold O. Beckman INC.
Instruments for Science and Industry
1020 MISSION STREET
SOUTH PASADENA, CALIFORNIA

Pumps, Turbo.....Announces the Coffin new Type "DE" Turbo Pump. Fully illustrated bulletin offers valuable data: complete description; typical services; accessibility for repairs; repair parts & service; etc. 6 p.
306A J. S. Coffin, Jr., Co.

Pumps, Vacuum.....Valuable suggestions on installation, starting, servicing, trouble-shooting, & helpful "do's" & "don'ts" on vacuum pumps and vacuum pumping systems, in fully detailed Bulletin No. 755.
306B F. J. Stokes Mach. Co.

Pumps, Vacuum.....NRC rotary gas ballast pumps keep their original high efficiency even when pumping troublesome vapors. Includes complete engineering information in company's profusely illustrated, 16 p. Bulletin.
71a *Naresco Equipment Corp.

Pumps, Vacuum.....In hundreds of major vacuum processing systems . . . pumps create low absolute pressures fast and efficiently, and provide quick recovery speed for high production rates. Data in Bulletin V54.
306C Kinney Mfg. Div.

Pumps, Vacuum, Steam Jet.....Complete details on steam jet vacuum pumps: Bulletins 5-E (single-stage); 5-H2 (two-stage); 5-H3 (multi-stage); 5-HB (boosters); and 5-HR (jet refrigeration). Illustrated.
306D Schutte & Koerting Co.

Pumps, Variable Delivery.....Company's new line of Type "A" packaged variable delivery pumps for both straight line or rotary drive applications, described in completely illustrated, 8 p. Bulletin No. 47010.
306E Oilgear Co.

Pumps, Vertical.....New designs provide both a process type and a transfer type . . . for application to chemical processing, refining techniques, condensate service and line booster service. Bulletin B-1700.
306F Peerless Pump Div.

Pumps, Vertical.....Describes & illustrates application of Peerless vertical industrial service pumps for liquid transfer from short settings in both industrial & process services. 16 p. Bulletin No. B-505.
306G Peerless Pump Div.

Pumps, Vertical Turbine.....Furnishes detailed information on line of vertical turbine pumps. Includes data concerning applications of pumps in air conditioning systems and for many other uses. Bulletin 4700.
306H Deming Co.

Purifiers.....A three-stage separating device for most efficient separation under critical operating conditions. Sizes: three inches and up. Find complete information on company product line in Publication No. 5216.
306I Cochrane Corp.

Ventilators.....Employed as a blower or as an exhauster, the two-way ventilating system is a compact, easily portable ventilator which features many applications in a variety of industries. Bulletin No. 1503-1.
306J Mine Safety Appliances Co.

Services, Processes, Miscellaneous

Accident Prevention Signs.....Brady self-sticking, accident prevention signs on handy "blue streak" dispenser cards . . . let you apply vital safety warnings right at the point-of-hazard. Data in illustrated Bulletin 145-C.
306K W. H. Brady Co.

Acidizing Service, Water Wells.....Designed to restore production in old wells by removing accumulated scale deposits, and by enlarging the channels in the water-bearing formation. Full data in illustrated, 4 p.
306L Dowell, Inc.

Ammonia Process.....Describes advantages of Kellogg ammonia process . . . which finds new ways to higher yields, bigger profits, less down time. Request "High Yields, Low Operating Cost Through Ammonia Plants."
306M W. M. Kellogg Co.

Ammonia Synthesis.....Advantages of Texaco partial oxidation process, Foster Wheeler improved liquid nitrogen wash system, & Casale ammonia synthesis process . . . in combination. 16 p. Bulletin No. 0-54-1.
19b *Foster Wheeler Corp.

Apparel, Industrial.....Describes 2 new styles of MSA decontamination safety suits—MSA chemical type (of flexible butyl-fairprene material) and MSA acid type (of neoprene-fairprene fabric)—in Bulletin 1301-2.
306N Mine Safety Appliances Co.

Apparel, Industrial.....New Folder describes aluminized asbestos protective clothing . . . designed for industrial workers, truckers, firemen, etc. Swatches of material have been tipped on to front cover.
306O Ind. Safety Specialties.

Apparel, Industrial.....New, fully illustrated 1955 Worklon catalog covers acid- & caustic-resistant work clothes (Orlon & Dynel) . . . engineered for the ultimate in comfort—quality—durability. 12 p.
333 *Worklon, Inc.

Apparel, Industrial.....Made entirely of miracle fabrics . . . Du Pont Orlon, or Union Carbide Dynel . . . the new line of Resistall work clothes offers numerous money-saving features. Complete data in illustrated, 8 p.
306P Resistall Work Clothes.

Apparel, Industrial.....Company presents a fully illustrated brochure containing detailed description of 100% Dynel apparel. Table shows the effects of various corrosive chemicals. A swatch is attached. 4 p.
306Q Wynko Mfg. Corp.

Apparel, Industrial.....Illustrated Catalog describes features of Chem-Weave industrial clothing: acid and alkali resistant; lock-stitched—seams as strong as the fabric; unharmed by repeated laundering; etc. 12 p.
306R Chem-Wear, Inc.

Aprons & Protective Apparel.....Lists all such items manufactured by company & includes actual swatches of materials in which they are available with type of service for which each material is best suited.
306S Surety Rubber Co.

Area Resources.....No other area so well situated in relation to plant sites & markets (Utah-Idaho-Wyo.-Colo.) has such a rich store of raw materials needed by industry. "A Treasure Chest in the Growing West."
306T Utah Power & Light Co.

Autopositive Paper.....Company presents illustrated booklet, "Modern drawing and Document Reproduction," offering valuable information on the line of Kodagraph materials. Covers cost saving features.
306U Eastman Kodak Co.

Cathodic Protection.....Institute makes available pertinent details on zinc for cathodic protection and grounding electrodes, in their descriptive booklet entitled, "Cathodic Protection with Zinc Anodes."
306V American Zinc Institute.

Cathodic Protection.....Contains valuable information on the cost of corrosion; the economics of cathodic protection; where and when it can and should be applied; etc. Illustrated Catalog Section S-6500.
306W National Carbon Co.

Cathodic Protection.....Anaconda Type CP cable and cathodic protection cut corrosion costs—gas mains and water pipes — lead-covered cable — underground storage tanks—etc. Details in Bulletin DM 5450.
306X Anaconda Wire & Cable Co.

Chemical, Plastics, Fertilizer Industries.....Second number in the series. "Technology Behind Investment," contains 3 reviews of trends and prospects for growth in chemical, plastics, and fertilizer industries.
306Y Arthur D. Little.

Clays & Shales of New York State.....349 p. hard-covered book presents a broad, scientific study of important clays and shales available in the state. Offers data on their utility in numerous ceramic products.
306Z N. Y. State Dept. of Com.

Construction, Acid-Proof.....Illustrated Corrosion Engineers Manual covers: materials (corrosion-proof cements, impervious membranes, acid brick, acid/alkali-proof coatings); construction basics; etc. 24 p.
306AA Nukem Products Corp.

Construction, Steel Buildings.....Design features, upon which the high quality of construction of Brookville All Steel Buildings are based, are completely described in a bulletin, "Brookville 102."
306BB Brookville Mfg. Co.

Coordinated Precision Technology .... The highly advanced technological products designed & manufactured by 18 producing companies of GPE Corp. serve more than a dozen major industries. Request Brochure.
306CC General Precision Equip.

Copy Makers.....Get instant photocopies of anything written, printed, typed, drawn or photographed right in your own office with the new Apeco Dial-A-Matic Auto-Stat. Request new fully illustrated reference.
67-8 *American Photocopy Equipment.

Demineralization, Mixed-Bed.....Covers the numerous advantages of mixed-bed demineralization. Provides a complete operating description of process. Data in fully detailed and illustrated Bulletin No. 3983.
306DD Permutit Co.

Design & Construction.....Fabrication of vessels, agitators or precision machinery . . . to engineering, design & construction of process units or entire industrial chemical plants. Offers detailed Bulletins.
306EE Industrial Process Engrs.

Design & Construction.....Specialists in unit operation . . . design & supply complete plants for fractionation, absorption, extraction, distillation & evaporation. Bulletin furnishes necessary information.
306FF Process Plants Engrg. Co.

Design & Construction.....Major contractor for the design, engineering and construction of one of the world's largest petro-chemical plants. Data in 24 p. illustrated booklet, "Industry's Partners for Progress."
306GG J. F. Pritchard & Co.

Desulfurization Process.....Describes Autofining—a new desulfurization process. Offers data on commercial operation of a 3,500-barrel-per-day plant, including yields, economics & process description. Issue 2.
306HH M. W. Kellogg Co.

Doors, Quick Opening.....Struthers Wells quick opening doors furnishes the means for complete automation . . . the results of advanced engineering achievements. For complete details, request Bulletin No. SW-553.
306II Struthers Wells Corp.

Engineering & Construction.....Serving basic process industries throughout world in: flow-sheet development & economic surveys; plant design, engineering & construction; etc. Brochures on services & products.
306JJ Southwestern Engrg. Co.

*From advt., this issue

The only producer of all these

PAINT, VARNISH AND LACQUER INTERMEDIATES:
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Maleic Anhydride Fumaric Acid Phthalic Anhydride
Hexahydro Phthalic Anhydride Tetrahydro Phthalic Anhydride
Nadic Anhydride Succinic Anhydride Fumaric Anhydride
Adipic Acid Maleic Acid Malic Acid Succinic Acid
Thiomalic Acid Monochlormaleic Anhydride
Metaphenylenediamine Dodecenylsuccinic Anhydride
Cyclohexanol Cyclohexanone Caprolactam
Aspartic Acid Aniline Diisocyanates (Nacconates)
Methyl Tetrahydro Phthalic Anhydride

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Chemical ASA Anti-oxidant B Anti-oxidant D

NATIONAL ANILINE DIVISION
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Allied Chemical

Boston Providence Philadelphia Chicago San Francisco
Portland, Ore. Greensboro Charlotte Richmond Atlanta
Los Angeles Columbus, Ga. New Orleans Chattanooga Toronto

Services & Processes

Engineering Services—Plant Layout

Engineering Services.....Points out the unique advantages of the Engineering Division. Services mentioned are: pilot plant engineering; engineering physics; packaging; Snell packaged plants; etc. Illustrated.
308A Foster D. Snell

Engineering Services.....Help protect your equipment investment—application engineering, analytical engineering, product development, field-service engineering maintenance service, etc. Brochure GED-2244.
308B General Elec. Co.

Face Shields.....New face shield series features a deep spark deflector that blocks foreign particles from entering at top of face shield. Details on this and other valuable safety advances in Brochure S-2141.
308C American Optical Co.

Field Service, Impervious Graphite Equipment.....Highly trained crews available on 24 hr. notice for repair or maintenance of Impervite or other impervious graphite equipment. Details upon request.
295c *Falls Industries

Filter Aids.....Chemically inert, sterilized in processing & suitable for filtering all types of liquids from acids to zein. Used in processing many products. Technical Bulletins cover Dicalite filtration.
308D Dicalite Div.

Filter Media.....Porous Kel-F—new chemically inert filter medium: noncorrodible fluorocarbon; high tear and tensile strength; no binders-no plasticizers; self-gasketing. Complete details in Release T-103.
308E Porous Plastic Filter Co.

Filter Media.....Performance data on porous "Teflon" filter media, information on complete filter units using this newly-developed fluoro-carbon material, are contained in a reference, Bulletin T-115.
308F Porous Plastic Filter Co.

Filters, Millipore.....46 p. fully illustrated Bulletin includes sections on: the nature & properties; directions for use in microbiological procedures; microbiological applications reported.
308G Millipore Filter Corp.

Fire Extinguishers.....Illustrated Folder offers data on line of dry chemical extinguishers. Feature new double-action power valve which provides simple, panic-proof fire-fighting.
308H Randolph Labs.

Fire Protection, Foam.....An illustrated booklet, "Foam Fire Protection," covers data on advantages of foam. Tested on petroleum or polar-solvents fires. Checked as to extinguishment time, foam volume, sealability.
308I National Foam System.

Fire Protection Systems.....Automatic fog system protects you around the clock, sounding alarms & putting water to work instantly wherever & whenever needed. "Fire Can Destroy Your Business" upon request.
308J Blaw-Knox Co.

Flaw Location by Dye Penetrants.....12 p. booklet describes in detail the Turco Dy-Chek inspection method and offers helpful suggestions on how to perform inspections on any metal by the dye penetrant method.
308K Turco Products.

Flotation.....More large plants are installing "Sub-A's" for entire flotation job, because they give maximum recovery at a low cost per ton. Dependable, simplified continuous operation. Bulletin No. F10-B81.
308L Denver Equipment Co.

Flotation Units.....Furnishes informative literature on the Aeroflotor—a new flotation unit. Discusses the principles behind the design of the unit, its operation and its special features. Bulletin WC-119.
308M Graver Walter Conditioning.

Gas Masks.....Describes canister-type gas masks. Includes information on canister construction, canister life, methods of determining gas concentrations, canister specifications, etc. Illustrated Form 541.
308N Acme Protection Equipment.

Gas Masks.....Company offers their valuable "Acme Protection Guide for Hazardous Gases"—a list of hazardous gases, combined with a list of equipment recommended to protect against them. 6 p. Bulletin 542.
308O Acme Protection Equipment.

Goggles, Safety.....Protect against dust, fumes, gas, smoke, etc. Can be worn with any make respirator or mask. Soft, pliable rubber frames give air-tight fit on any shape face. Offers fully descriptive literature.
308P H. S. Cover.

Goggles, Visor.....Provide right combination of protection from industrial eye hazards: protection from flying particles and splashes, and protection from glare. Features and details in Bulletin 0301-3.
308Q Mine Safety Appliances Co.

Gratings, Floor.....Covers the many features of stainless steel gratings (rust & chemical proof, non-magnetic, high heat resistant, etc.)—a new boon to chemical, oil & packing industries. A.I.A. File No. 14-R.
308R Kerrigan Iron Wks.

Gratings, Steel.....Blaw-Knox Electroforged steel grating offers valuable feature: rigid one-piece construction—easy to install; non-slip twisted crossbar—for safe footing; etc. Bulletin No. 2486.
308S Blaw-Knox Co.

Gravity Concentration.....Literature describes how tables are used to treat materials subject to gravity concentration. Includes data on capacity, operation, construction, application, etc. Bulletin T1-B3.
308T Denver Equipment Co.

Industrial Health.....Offers a broad integrated program of laboratory, inspectional & consultative services in the related fields of industrial hygiene & toxicology, safety, & sanitation. Data in Bulletin.
308U Emmet Technical Associates.

Labels, Identification.....Quick, permanent, easy to apply identification labels offer you . . . a uniform system carefully laid out to cover every possible industry and application. Full details in 8 p. Brochure.
308V North Shore Nameplate.

Laboratory Equipment.....New "Mini-Lab" Brochure provides information on custom-engineered assemblies and components for small-scale laboratory work. Feature important savings in time—materials—money.
308W Ace Glass.

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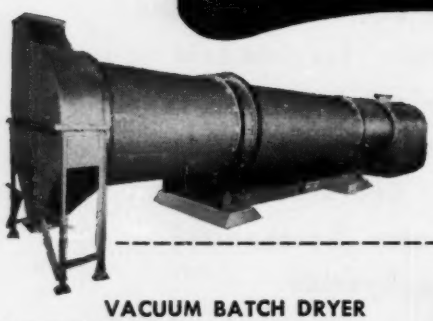

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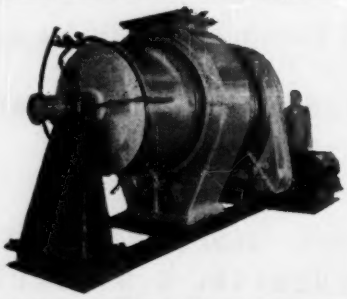

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Literature and information on request.

*From advt., this issue

Laboratory Equipment.....New edition of manual, "Laboratory Glass Blowing with Pyrex Brand Glasses," offers information on working characteristics of Pyrex brand & Vycor brand glasses. Illustrated, 20 p.
309A Corning Glass Wks.

Laboratory Kits.....Transparent plastic guide rule & template corresponding to ¼" to 1 ft. scale, with rectangular cutouts representing various base units are provided in a new "Plan-A-Lab" planning kit.
309B Metalab Equipment Corp.

Laboratory Ware.....Offers many properties important to development, experimental or analytical work. It is chemically stable, stands temperatures to 1900°C & is easy to clean. Data in Bulletin 793.
120-1e *Norton Co.

Line Cleaning.....Specialists in scale & sludge removal with chemicals present booklet, "A Solution to the Problem of Deposits in Piping Systems," which discusses three methods used in cleaning lines.
309C Dowell, Inc.

Maps, Physical.....Presents a huge physical map of New York State and adjacent areas. Includes information relating to boundaries, transportation, population of the numerous cities, elevations in feet, etc.
309D N. Y. State Dept. of Com.

Mechanical Installation of Equipment.....Company furnishes a new, informative 32 p. reference which illustrates and geographically describes numerous recent mechanical installations of equipment.
309E Eichleay Corp.

Mineral Industries.....109 p. booklet covers the mineral industries of N. Y. State. Chapters include: Mining in N. Y. State; Iron and Titanium; Zinc and Lead; Talc; Salt; Gypsum; Garnet; Graphite; Peat; etc.
309F N. Y. State Dept. of Com.

Models, Scale.....Furnishes a new Brochure showing facilities for producing scale models of process plants, laboratories, plant layouts and industrial products. Includes illustrations and approximate prices.
309G Industrial Models.

Models, Scale.....Describes application and manufacture. Illustrates number of models produced by firm in metal, wood and plastic—ranging from broad, stylized work to finely detailed constructions. 4 p. Booklet K.
309H Arthur B. Johnson & Co.

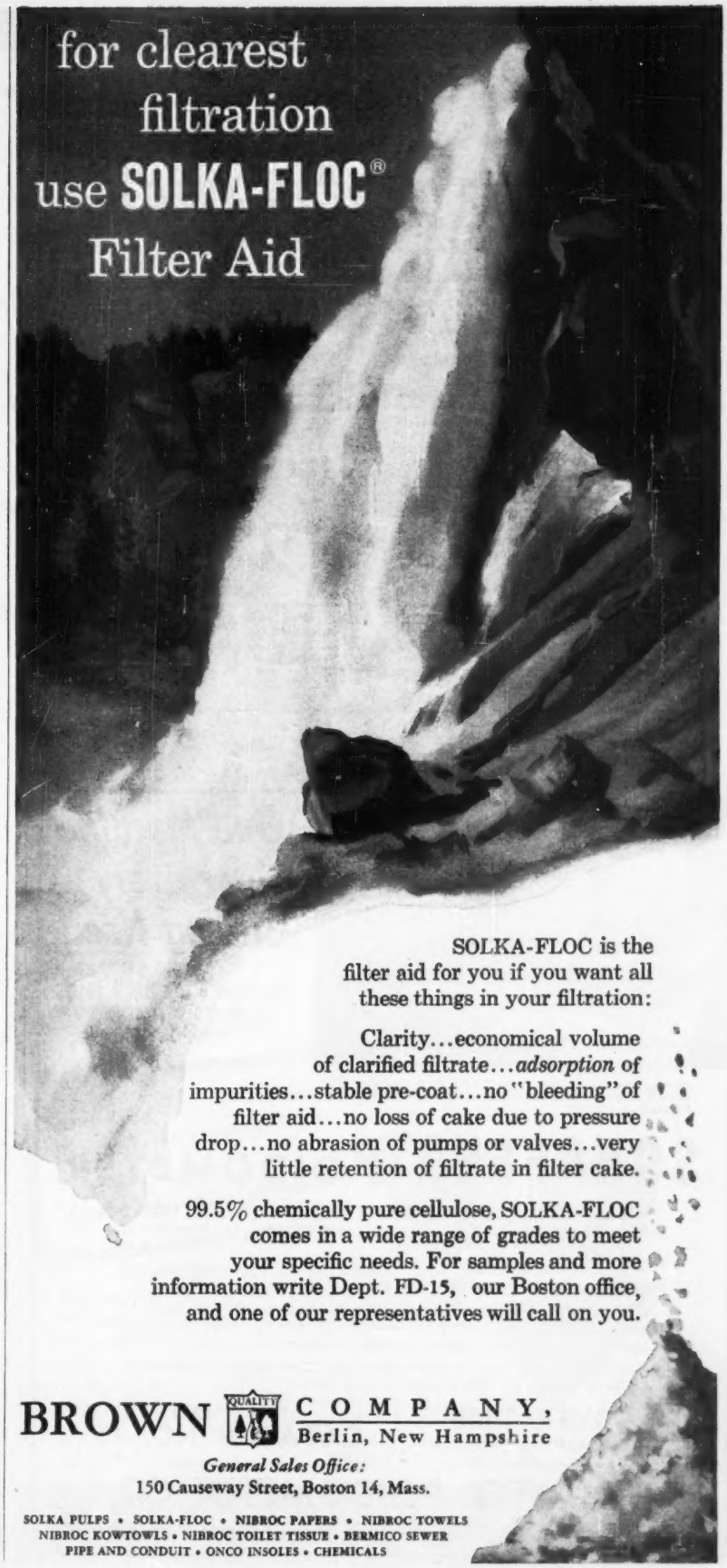
Models, Scale.....Presents informative Brochure describing ten functions of scale models. Covers data on design, check, training, erection, time study & safety standards, future planning, etc. Illustrated.
309I Project Models Co.

Pads & Discs, Polishing.....Fully illustrated Folder includes information on Kapcor—Gelaco—Amcor polishing pads & discs . . . the longest lasting discs & pads made for polishing, rubbing & compound operations.
309J Kammel Products Corp.

Petroleum Refineries & Process Units.....Complete plants & special equipment have been designed & built for practically every type of process currently used in petroleum refining industry. Bulletin No. 0-19-8.
309K Foster Wheeler Corp.

Pipe Lines for Petroleum Transportation.....Describes in general terms, a typical pipe line system, the variables to be measured, and some of the problems of pipe line control. Request 18 p. Bulletin No. PL-1.
309L Minneapolis-Honeywell.

Plant Layout.....Announces new brochure, "The ABC of the Repro-Templet Method of Plant Layout." Explains & illustrates advantages of this efficient method. Includes experimental sheet of Repro-Templets.
309M Repro-Templets.



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Services & Processes

Plant Sites—Technical Charts

Plant Sites.....Data on raw materials, transportation, power and fuel, markets, labor, facilities, sites, community services, laws and regulations, etc. Also includes physical map. "Industrial Location Services."
310A N. Y. State Dept. of Commerce.

Plant Sites.....400 p. fact-filled book is a comprehensive economic study of the Lower Wabash River Valley. Contents include a geologic map & cross sections—maps of inland waterways & major railroads—etc.
310B Chicago & Eastern Ill. R. R.

Plant Sites.....For a detailed description of the many industry advantages in the American Gas and Elec. service area (Mich.-Ind.-Ohio-Ky.-W. V.-Va.-Tenn.), request brochure, "A 7-State-Plant-Site-Trip—In 5 Minutes."
310C American Gas & Elec. Co.

Plant Sites.....Analytical water surveys of choice plant sites in Southeast & Southwest. Each Brochure covers a separate potential industrial site, detailing industrial water sources, chemical content, etc.
310D St. Louis-San Francisco Rail.

Plants, Chemical.....Expands plant with a minimum of interference to operations—features outstanding record of maintaining operating efficiency during construction period. Request chemical Brochure 101.
310E Kaiser Engrs.

Plants, Nitric Acid.....Employ well-known Du Pont process, using high-pressure catalytic oxidation, to produce nitric acid. Feature lower capital investment . . . lower operating costs. New HNO_3 Bulletin.
310F Girdler Co.

Plants, Oxygen.....Blaw-Knox-built, Linde-Fraenki units produce more oxygen of greater purity at the lowest total operating cost of any tonnage oxygen plants available. Find details in Bulletin 2402.
310G Blaw-Knox Co.

Plants, Package, Sewage Treatment..... Package plants offer a complete sewage treatment process for small installations utilizing the activated sludge process. Full information in illustrated Bulletin 22S79.
310H Walker Process Equipment.

Plants, Packaged.....Packaged plants save time, money. "Pfaudler Services for Unit or Complete Process Operation" tells exactly what you get, and what company must know in order to tackle your problem.
310I Pfaudler Co.

Plants, Pilot.....Company announces the availability upon request of a Bulletin describing typical continuous test plant layout . . . with additional information on Denver continuous pilot plant equipment.
310J Denver Equipment Co.

Plants, Processing, Fat & Oil.....Offers information on fat and oil processing plants for fat splitting, fatty acid straight and fractional distillation, hydrogenation, esterification, oil bodying. Bulletin ID-49-12.
19d *Foster Wheeler Corp.

Polyethylene Ware.....For laboratory use—unbreakable, chemically inert, reduces accidents, inexpensive. Describes narrow mouth bottles, beakers, funnels, tubing & sheeting, etc. 8 p. illustrated Bulletin P-1154.
310K Scientific Glass Apparatus.

Porous Media & Filtration.....First issue of "Poro-Scope" covers 2 discussions: on new technology which makes possible low-cost, porous stainless filters; on filter area & its significance in filter purchase.
310L Pall Filtration Cos.

Porous Mediums.....Typical applications: filtering water or solvents; cutting oils, wine and other liquids: reclaiming cleaning fluids; handling industrial oil wastes; etc. Covers details in Bulletin No. 140.
120-1b *Norton Co.

Preventive Service Plan.....PSP—a Pfaudler service that nips your maintenance problem in the bud. Provides qualified instruction for your personnel, periodic inspection of equipment. Detailed Bulletin.
310M Pfaudler Co.

Processes, Electroplating.....Describes & lists key characteristics of 16 processes. These include 7 nickel plating, 3 zinc, 1 cadmium, 1 copper with & without periodic reverse current, etc. Bulletin P-100.
310N Hanson-Van Winkle-Munning.

Processing.....When faced with a tough processing problem...pre-test both equipment & processes under production conditions in Pilot Plant of Buflovak Research & Testing Laboratory. Data in Catalog 358.
310O Buflovak Equipment Div.

Processing, Low-Temperature.....Presents a valuable 36 p. brochure on low-temperature processing of gases, liquids, and solids. Describes the broad opportunities—illustrates present and probable applications.
17 *Air Products

Protection, Structural Steel.....Announces the availability upon request of a new publication, "The Protection of Structural Steel (Current Good Painting Practice for Steel Structures in the United States)." 8 p.
310P Mellon Institute.

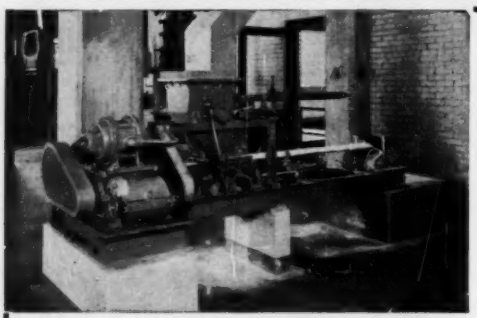
Research, Experimental.....New facilities for experimental research in chemistry, engineering, and applied physics described, together with examples of products developed and investigations completed. 4 p.
310Q Atlantic Research Corp.

Research in Catalysis.....Offers illustrated Booklet covering typical examples of research studies in catalysis and surface chemistry . . . and some of the special talents and equipment that can be applied.
310R Battelle Memorial Institute.

Respirators.....Dupor No. 4 Respirator has big double filters for easy breathing and greatest filtration. Soft rubber face mask gives airtight fit. Request descriptive Folder on the complete Dupor line.
310S H. S. Cover.

Respirators.....New interchangeable respirators in both single and double cartridge styles for organic vapors, for dusts and organic vapors, for dusts and mists, etc. Informative Bulletins furnish details.
310T Willson Products.

Respirators, Chemical Cartridge.....A new combination of chemical cartridge protection and the comfortable "All-Vision" facepiece in a compact, light, single unit. Complete information in illustrated Bulletin No.1007-5.
310U Mine Safety Appliances Co.



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Safety Equipment.....Company line protects against explosion & fire . . . seals against evaporation. Offers the Protectoseal safety bulletin, "How to Handle Flammable Liquids in the Plant," on request.
311A Protectoseal Co.

Safety Equipment.....1955 issue of "Everything in Safety"—130 p. catalog of personal protective equipment & industrial safety devices—covers respiratory devices, eye protection, hats, gloves, carboy pumps, etc.
311B General Scientific Equip.

Safety Equipment.....Describes the full line of industrial safety equipment & safety gratings. Shows the various types of grating, platforms, ramps, ladders, flooring, catwalks, dockboards, etc. Catalog No. BC-1.
311C Bustin Firm-Grip Grating.

Safety Equipment, Industrial.....Easy-to-read, fully illustrated general catalog is divided into four major sections . . . eye protection, head protection, respiratory protection, and welding. 68 p.
311D Willson Products.

Safety Practices . . . . . "Five-Minute Safety Talks for Foremen" covers general industrial practices . . . fire protection, material handling, control of machine hazards, etc. Request illustrated Books Nos. 1 & 2.
311E National Safety Council.

Safety & Rescue Equipment.....Fully illustrated, 16 p. release entitled, "Disaster!" is designed to assist industrial plants in choosing safety and rescue equipment for use in emergencies. Booklet No. 5000-4.
311F Mine Safety Appliances Co.

Services, Pulverizing.....Equipped & experienced to process many materials including resins (synthetic), foods, natural organics & fillers. Covers services & facilities—pulverizing, blending, reclaiming, etc.
311G Columbia Pulverizing Corp.

Sites, Industrial.....Describes Upper Kanawha Valley of W. Va. with its industrial advantages and facilities available to industry. Contains statistics as to employment, transportation, all resources & a color map 16 p.
311H Upper Kanawha Valley Dev.

Solvent Safety.....The problem of finding the right solvent for the jobs that must be done is shown to be capable of easy analysis & sure control by application of seven rules of measurement to solvent qualities.
311I John B. Moore Corp.

Spray-Stops . . . . . Milsheff Spray-Stops protect personnel & equipment by deflecting leakage at valves & joints . . . spot pipeline leaks instantly by changing color when hit by chemicals. Illustrated Booklet.
311J Milsheff Corp.

Steam Purity.....Dangers of steam contamination & how to prevent or correct them outlined in 6 p. folder, "Steam Purity." Includes symptoms of contamination, kinds of carryover, preventive measures, etc.
311K Hall Labs.

Steam-Water Cycle Deposits.....Prepares a tabulation giving mineral name, chemical formula, usual areas in which deposits are found, the normal causes, & some suggested preventive measures. Bulletin 28X8155.
311L Allis-Chalmers Mfg. Co.

Syphons.....The most practical syphon you can find—Nalgene Poly-Syphon. Made entirely from polyethylene; chemical-resistant, safe, simple to use. Company furnishes descriptive literature. Catalog No. 1294.
345 *Nalge Co.

Technical Charts.....New 12 p. Catalog outlines services in producing recording charts for standard & special instruments. Valuable illustrated reference includes samples of both dial & roll type charts.
311M Technical Charts.

Let MULTI-METAL Help Solve Your Filtering and Screening Problems

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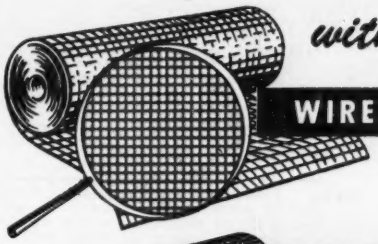

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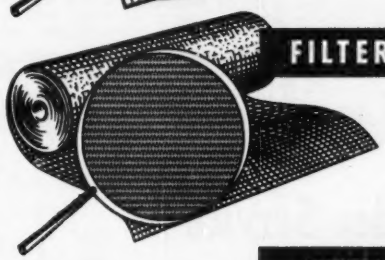
Plain, twilled, herringbone and cabled weaves in all meshes.



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Plain or twilled Dutch, or braided, in every degree of density.

The above available in all commercial metals in all widths.

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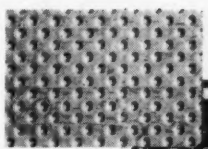

Rigid, perforated, double sheet, non-plugging—for filter leaves, tower bottoms, etc.

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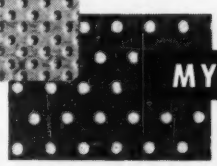

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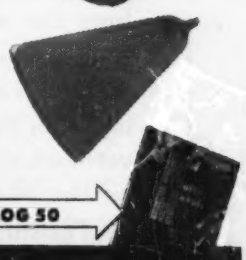

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Services & Processes

Testing, Batch & Continuous—Welding Process

Testing, Batch & Continuous.....Use Denver testing laboratory facilities for complete batch or pilot tests. Ample test facilities for investigations on crushing, grinding, mixing, etc. Bulletin T4-B15.
312A Denver Equipment Co.

Tools, Maintenance.....Gardner-Denver maintenance tools make plant housekeeping easier. Descriptive bulletin covers trench diggers, paving breakers, clay spaders, air hoists, sheeting drivers, drills, etc.
312B Gardner-Denver Co.

Training, Executive.....Releases a valuable literature reference, "Forging Ahead in Business." 48 p. general description of Modern Business Course and Service available from Alexander Hamilton Institute.
235 *Alexander Hamilton Institute

Urea Process, Pechiney.....Low cost, minimum corrosion process . . . features a neutral oil circulating medium for recycling of unconverted ammonia-carbon dioxide. Details available in Bulletin No. 0-54-3.
19e *Foster Wheeler Corp.

Waste, Industrial.....Industrial Hygiene Foundation—a research association of industries for advancing industrial health & improving working conditions—offers "Significance of Industrial Wastes." 12 p.
312C Mellon Institute

Waste Treatment.....Profusely illustrated manual describes sewage & industrial waste treating methods & equipment—the most complete line engineered & manufactured by a single organization. Manual No. 149.
312D American Well Wks.

Waste Treatment, Industrial.....Describes advantages inherent in the treatment of industrial waste waters and process liquors. Includes details, schematic drawings, photographs, etc. in 4 p. Bulletin No. WC-116.
312E Graver Water Conditioning.

Waste Treatment, Industrial.....Covers company's water, sewage & trade-waste treating equipment—circular clarifiers; rectangular clarifiers; hydro-classifiers: digesters; etc. 20 p. illustrated Bulletin 35-D.
312F Hardinge Co.

Waste Treatment, Industrial.....Fully illustrated, 24 p. contains facts on water pollution, a 4-step course of community action to fight pollution, examples of successful municipal campaigns, etc. Bulletin GEA-6096
312G General Elec. Co.

Water Conditioning.....Supplementary treatments for boiler makeup water discussed in new reference. Full details of Allis-Chalmers 40 Series Supplementary Treatments and their use Bulletin No. 28X8226.
312H Allis-Chalmers Mfg. Co.

Water Conditioning.....Comprehensive Data Book covers numerous subjects: hydraulics; impurities in water; chemical conversions; coagulant, acid & alkali dosages; chemicals used in water treatment etc. No. 2478A.
312I Permutit Co.

Water Conditioning Equipment.....For boiler feed, process, & other industrial needs. Describes mono-bed demineralizers; 4-column demineralizers; degasifiers; water softeners; water filters; etc. Illustrated, 4 p.
312J Pennfield Mfg. Co.

Water Conditioning Equipment.....New bulletin presents a concise discussion of the basic types of equipment available for treatment and includes photographs of typical installations. Request Brochure WC-117.
312K Graver Water Conditioning.

Water Service.....“Cracking & Embrittlement” outlines water system trouble spots & factors that can produce breakage & failure in components of heaters, boilers, condensers, process equipment & interconnecting piping.
312L Hall Labs.

Water Treatment.....Savings realized from & several types of equipment used in white water treatment discussed in reprint, “Some Economic Aspects of White Water Treatment in Pulp & Paper Mills,” No. T-122.
312M Graver Water Conditioning.

Water Treatment.....Hit-or-miss addition of chemicals can be just as harmful to an industrial water-system as improper prescription of medicine is to the human body, warns folder, “Feeding of Chemicals.”
312N Hall Labs.

Water Treatment.....The dangers of scale and corrosion in cooling systems and organic contamination of cooling system water outlined in 6 p. folder issued by water treatment consulting firm. “Cooling Water.”
312O Hall Labs.

Water Treatment, Cooling..... Non-Chromate Treatment (Formula 527) . . . for control of corrosion & scale formation in engine cooling systems & elimination of damage to vital operating parts. Bulletin 5014.
312P Dearborn Chem. Co.

Water Treatment, Industrial.....The importance of eliminating high product rejection and damage to machinery from impure water is outlined in new available literature. 6 p. folder, “Primary Water Treatment.”
312Q Hall Labs.

Water Treatment Plants, Packaged..... Presents comprehensive discussion of Graver's new reactivator packaged water treatment plant. Cutaway view of plant shows details of equipment. Technical Reprint No. T-126.
312R Graver Water Conditioning.

Welding Process.....Issues a fully illustrated 10 p. Bulletin describing a new welding technique known as the EB Weld Insert process. Covers applications, compositions, dimensions, detailed specifications.
312S Arcos Corp.

*From advt., this issue

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Reader Service postcards can help you get more information. They're inside the back cover: easy to use, reliable, speedy.

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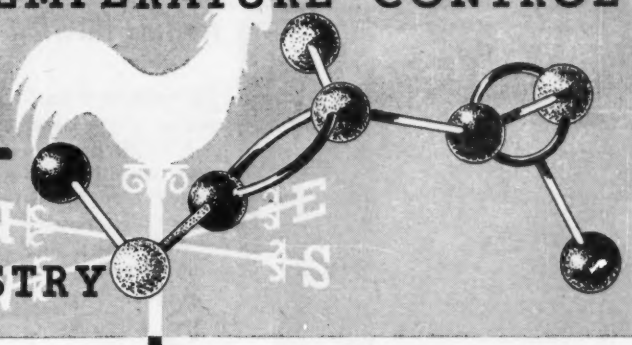
by **Marlo**

for the

CHEMICAL INDUSTRY



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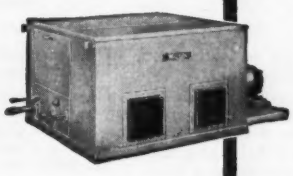
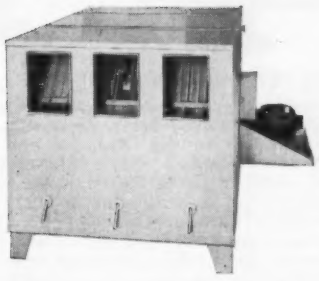
- Dew Point Temperature Control
- Heating and Cooling



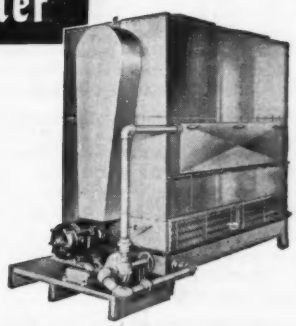


Equipment for the Conservation of Water

For Liquid Cooling—Water and Oil

- Evaporative Condensers
- Cooling Towers

For 3 to 100 tons nominal capacity for any refrigerant. Small, compact, lightweight, adaptable to indoor or outdoor installation. Protected four ways against corrosion. Save up to 95% of normal water demand.



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See Our Catalog in SWEET'S Architectural File

Marlo COIL COMPANY

Manufacturers of COOLING TOWERS • EVAPORATIVE CONDENSERS • INDUSTRIAL COOLERS AIR CONDITIONING UNITS • MULTI-ZONE UNITS • BLAST HEATING & COOLING COILS

Saint Louis 10, Missouri

MARLO COIL CO.
6137 Manchester Ave.
St. Louis 10, Mo.

Please send me complete information on the following

- ☐ Coils—Heating & Cooling
- ☐ Air Conditioning Units
- ☐ Evaporative Cooling Equipment
- ☐ Other (Please elaborate in accompanying letter)

NAME.....

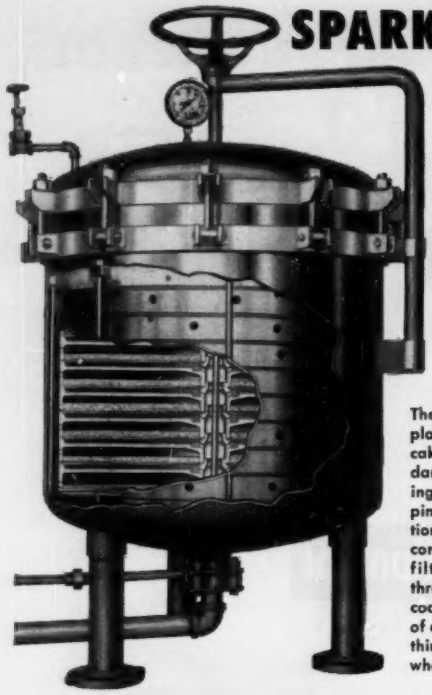
COMPANY.....

ADDRESS.....

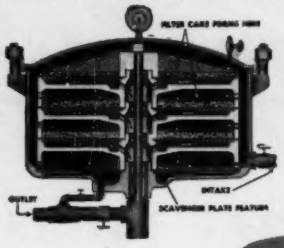
CITY.....ZONE....STATE.....

SPARKLER HORIZONTAL PLATE FILTERS

for fine filtering and polishing of liquids

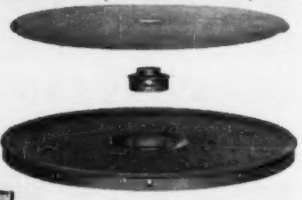


The standard horizontal plate filter . . . with positive cake stability and other operating features unmatched by any other filter.



Cross section of horizontal plate filter showing cake resting on plates without tensile strain. No danger of slipping, cracking, or passing of filter aid. Filter aid is floated into position for an even pre-coat and built-up cake.

The Sparkler horizontal plate provides positive cake stability with no danger of cake cracking, slipping, or dropping even with a variation in pressure or a complete shut down of filtering. No break through is possible. Precoating is uniform and of even thickness. A very thin pre-coat is practical when desired.



The three parts of a horizontal plate assembly can be easily taken apart for thorough cleaning, making possible complete sanitation in filtering food products.

Free drainage is a feature of horizontal plate construction. Flow friction is greatly reduced to promote high flow rates.

FOR FILTERING CHEMICALS

Sparkler Filters are available in a wide range of sizes and constructed of a variety of metals to meet practically every requirement in the Chemical and Pharmaceutical industry. Tanks and wetable parts can be supplied in stainless steel, mild steel, bronze, nickel. Monel, Hastelloy or plastic; steam or brine jacketed in capacities up to 10,000 G.P.H. Filter plates are available in two depths, deep plates for liquids carrying a large percentage of solids; shallow plates for liquids carrying a small percentage of solids, the latter providing a larger filtering area in the same size tank.

Sparkler Filters are particularly suited for fine filtration and polishing operations. They are equally efficient for continuous or intermittent operation. Complete recovery of product is obtained by "wash through" or "blowdown" of cake without removal from filter. The Sparkler patented scavenger plate acts as an auxiliary filter with independent control valve, filtering each batch down to almost the "last drop" leaving practically no unfiltered hold over in the bottom of the tank.

Any kind of filter media, screens, or cloths, and all grades of filter paper, together with all types of filter aid such as diatomaceous earth, activated carbon, fullers earth, etc., can be used in a Sparkler filter with maximum efficiency. Filter aids are built up in an even cake and a very thin pre-coat is possible with attendant economies in time and material on a Sparkler horizontal plate.

Perhaps more Sparkler Horizontal Plate Filters are used today in chemical and pharmaceutical processing than any other single type of filter.

FOOD PROCESSING FILTERS — The positive sanitation feature of horizontal plates and tanks is one important reason why Sparkler filters are popular in food processing plants.

LARD AND VEGETABLE OILS are handled to good advantage in Sparkler Filters and a better finished product produced because the first run through the filter is not contaminated by rancid oils and soap particles retained in laundered filter cloths as used in some other methods of filtering.

BEET SUGAR SYRUP — 65° Brix juice is filtered to a highest purity and brilliant clarity in Sparkler Filters. On horizontal plates the filter cake is built up evenly with uniform density and thickness and the cake can be thoroughly washed with a minimum of wash water. Sudden interruptions of house flow or changes in Brix have no effect on cake stability; the cake will not pass filter aid due to cracking or dropping because cake is held in position by gravity and is not dependent on sustained pressure for stability.

INFORMATION YOU SHOULD FURNISH OUR ENGINEERS

Nature of fluid—Inert, volatile, inflammable? Give pH, if available.

Physical conditions—Temperature at filtering point? Viscosity at filtering temperature, in SSU or equivalent, or give SAE rating.

Flow and pressure—Is filter to be stationary or portable? Batchwise or continuous flow? For installation in pressure line or to be equipped with pump? Desired flow rate in gallons per hour or per minute. If in-line installation, give maximum flow rate, maximum allowable working pressure and minimum.

Nature of solids—Hard, abrasive, sticky, fibrous, flocculent, colloidal? Percentage of solids?

Operating conditions—Length of cycle (time between cleanings) desired? If filter is to have pump and motor, should motor be standard, splash-proof, or explosion proof? Give voltage, phase, cycle of current available for motor.

You are invited to place your filtering problem in the hands of our filtration engineers. They have developed many successful methods of filtering difficult materials and may be able to prescribe a solution to your problem without wasteful experimentation.

Specifications . . . Horizontal Plate Filters

Model No.	Capacity GPH	Area Sq. Ft.	Cake Sp. Cu. Ft.	DIMENSIONS OVERALL Height	Width	Length	Ship. Wt. Lbs. (Approx.)
8-3	30-60	1.0	.073	16"	10"	24"	120-150
8-6	100	2.0	.15	17"	15"	27"	125-140
14-D-4	200	3.2	.48	40"			275-400
14-S-7	400	5.6	.38	40"			325-450
18-D-4	400	6.2	.9	45"			585-735
18-S-7	550	10.8	.67	45"	Circle		595-745
18-D-6	500	9.2	1.35	49"	29"		625-775
18-S-11	750	17.0	1.16	49"	in		625-825
18-D-8	650	12.3	1.8	53"	diameter		665-865
18-S-15	1200	23.0	1.44	53"			685-885
18-D-12	1000	18.5	2.7	61"			745-945
18-S-23	1800	35.4	2.17	61"			775-975
33-D-7	2000	37.8	6.3	69"	44"	x 66"	1505-2205
33-S-11	3000	60.0	4.9	69"	44"	x 66"	1500-2200
33-D-9	2600	48.6	8.0	74"	44"	x 66"	1635-2335
33-S-14	3600	75.5	6.3	74"	44"	x 66"	1650-2350
33-D-12	3500	64.8	10.8	81"	44"	x 66"	1835-2535
33-S-19	6000	100.0	8.5	81"	44"	x 66"	1900-2600
33-D-17	5000	91.8	15.3	96"	44"	x 66"	2155-2855
33-S-28	8500	151.2	12.6	96"	44"	x 66"	2350-3050

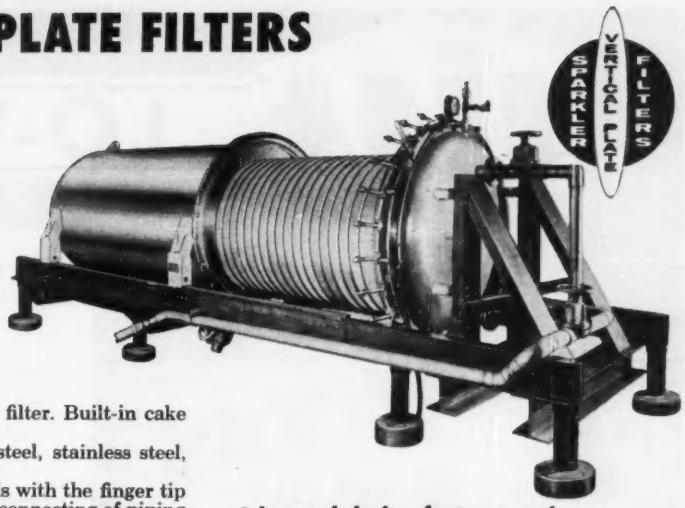
Rubber-lined tank, molded composition plates and rubber-lined piping available in certain 18 and 33 inch sizes. Specifications on request. No scavanger plate in rubber-lined construction.
All standard models available in carbon steel, stainless steel, pure nickel or monel, bronze, Hastelloy, and Inconel.

SPARKLER MANUFACTURING CO. · MUNDELEIN, ILL.

SPARKLER VERTICAL-PLATE FILTERS

Heavy Duty Large Capacity

MODEL MCR
Retractable Tank Filter



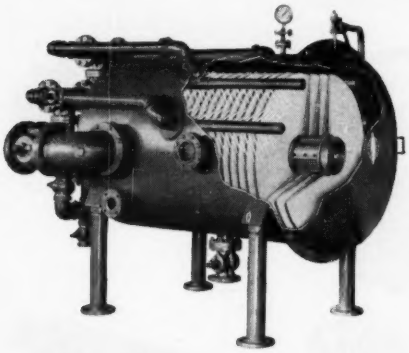
This filter will accommodate products which have a heavy residue. Plates can be spaced at any distance apart to allow for a cake thickness up to 3" or more. Cake can be reduced to a semi-dry condition with blow down and removed by hand scraping or in some cases merely tapping the edge of the plate. This solves the sewer disposal problem with a heavy cake which frequently amounts to a ton in a 1000 sq. ft. filter. Built-in cake flush off spray tubes can be furnished when desired.

The filter wetting parts can be supplied in mild steel, stainless steel, Hastelloy or other metals.

One man can open this filter in a matter of seconds with the finger tip automatic control power opening mechanism. No disconnecting of piping is necessary, and the filter seal of the plates is not broken in opening. The self-sealing cover is released by a single lever movement. No head room is required above filter to open and clean.

Heavy products such as Tall Oil, and like oils, primary beer filtration, etc., are filtered very successfully in the MCR retractable tank filter.

Advanced design features make this filter the logical choice of those who want the best.



MODEL SCJ *Heavy Duty Water Filter*

Available in capacities up to 5,000,000 gallons per 24 hr. operation.

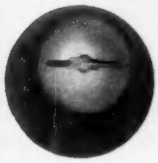
The Sparkler SCJ filter introduces a new phase in large volume filtration of water. Now it is possible to employ the high quality, fine filtration characteristics of a diatomite filter for large volume plant water supply, municipal water works, and swimming pools. Clean pure water can be obtained in any required volume from sources such as lakes, rivers, and wells. The SCJ diatomite filter will remove all suspended matter either colloidal or solid, such as silica sand, algae, organic material, silt, etc. Bacteria is reduced 80% to 100% depending on the type of bacteria and the grade of diatomite used as a filter aid. Thus reducing the required chlorination.

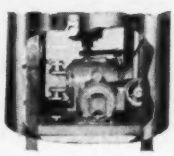
Single units capable of handling 5,000,000 gallons of water per day are available. Multiple units can be engineered into a system for larger requirements.

Less than 0.2% of water is required to backwash and clean the largest filter units, a complete fresh pre-coat applied and the filter ready to resume service in 15 minutes.

Operation is simple, no highly skilled specialized personnel is required to insure efficient performance.

Many SCJ filter installations are now operating in industrial plants and in municipal water supply systems with complete satisfaction.





Sparkler New Type Combination Unit Slurry Feeder for Diatomite and other Filter Aids

The important feature of this new Sparkler combination unit slurry feeder is the slow speed agitator operating at the bottom of the tank, that has the advantage of not breaking down the natural cellular structure of diatomite thus preserving the full porosity of the diatomite cake. A much better high flow filter cake is built up with slurry from this feeder.

The top of the tank is fitted with a removable cover to keep slurry clean and sanitary. One motor enclosed with automatic feeder in the base of the unit operates both feeder and agitator.

Tanks and agitator can be supplied in mild steel, stainless steel, or other metals to meet requirements.

All sizes and types of slurry tanks, surge and supply tanks, with or without feeders, can be furnished in any metal as separate equipment.

Model MCR Filter Capacities

Model No.	Sq. Ft. Per Plt.	Sq. Ft. Per Filter	C to C of Plates	Cu. Ft.* of Cake
MCR-64-24	42	1008	4	84
MCR-64-18	42	756	4	71.3
MCR-46-23	22	506	3½	42.1
MCR-46-19	22	418	3½	34.8
MCR-46-16	22	352	3½	29.3
MCR-46-14	22	308	3½	25.6
MCR-46-11	22	242	3½	20.1
MCR-34-17	12	204	3¼	17
MCR-34-13	12	156	3¼	13
MCR-34-11	12	132	3¼	11
MCR-28-13	8	104	3	8.6
MCR-14-6	1.8	10.8	3¼	.9

*Cubic feet of cake based on 1" thick cake.

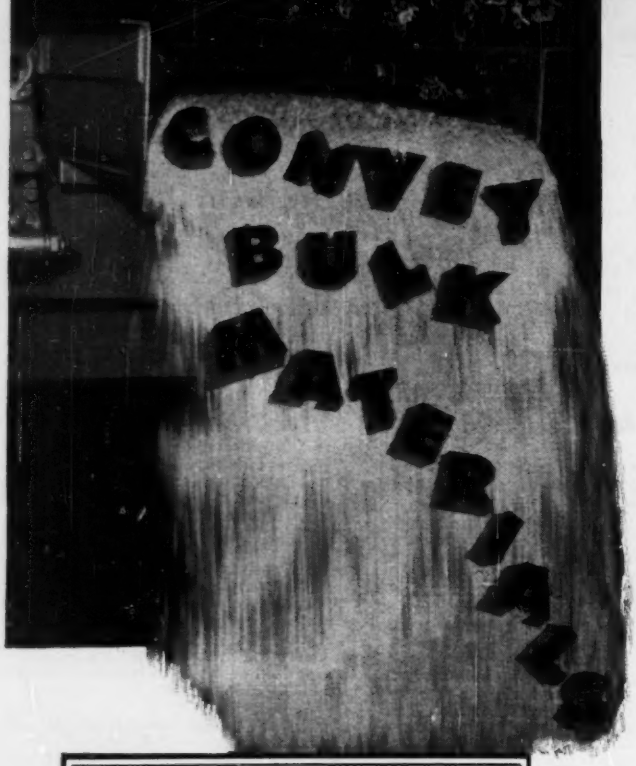
Model SCJ Filter Capacities

Model No.	Filter Area Sq. Ft.	Pipe Conn. Inches	Approx. Floor Area (Feet)	GALLONS PER DAY* 1 GPM/Ft.²	2 GPM/Ft.²
Model SCJ 24-5	25	3	5x2	36,000	72,000
Model SCJ 24-9	50	3 or 4	5x3	72,000	144,000
Model SCJ 24-13	75	3 or 4	5½x3	108,000	216,000
Model SCJ 33-9	100	4 or 6	6½x3	144,000	288,000
Model SCJ 33-13	150	6	7½x5	216,000	432,000
Model SCJ 33-18	200	6	8½x5	288,000	576,000
Model SCJ 40-16	250	6 or 8	8½x6	360,000	720,000
Model SCJ 40-19	300	6 or 8	9x6	432,000	864,000
Model SCJ 40-22	350	6 or 8	9x6	504,000	1,008,000
Model SCJ 40-25	400	6 or 8	9x6	576,000	1,152,000

Larger capacities up to 2000 sq. ft. can be engineered. (*) Lower or higher flow rates (FPM/Ft.²) may be used when advantageous to the problem involved.

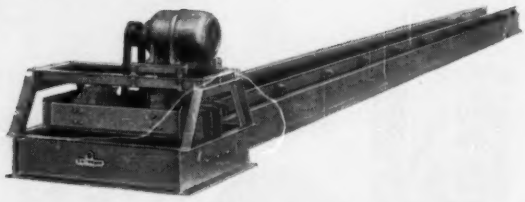
Service Representatives in Principal Cities • Plants at Galt, Ontario, Canada • Amsterdam, Holland

AJAX LO-VEYORS



● Today's high hourly rates are a challenge to materials handling men. Ajax Lo-Veyors are one of the surest, most economical ways to handle bulk materials at reduced cost. They operate on the vibrating principle and handle materials ranging in size from five microns up to large lumps. They are easily arranged for performing two or more operations such as scalping, separating, washing as well as conveying. Mechanism is completely enclosed,—ideal for use under abrasive, explosive and sanitary conditions.

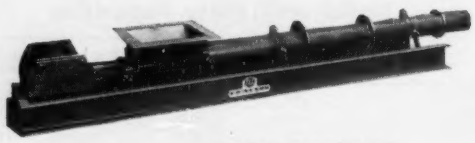
AJAX OPEN and CLOSED PAN LO-VEYORS



Ideal for conditions where contamination or explosive conditions exist. Easily arranged for diaphram seals when tube passes thru wall.

FAST, GENTLY, SAFELY... IN LARGE OR SMALL SIZES & TONNAGES AT NEW LOW COST

Write for Bulletin 39



AJAX TUBULAR LO-VEYORS

Meet a wide variety of conditions. Available in lengths, widths and capacities to suit individual requirements.

AJAX FLEXIBLE COUPLING CO. INC.

REPRESENTATIVES IN PRINCIPAL CITIES

WESTFIELD, N. Y.

1955 INVENTORY

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Companies: Page 349

Your Company Index is a complete alphabetical listing of all companies offering products for sale and/or mentioned in the editorial pages of this Inventory Issue. This new and different combined index will locate for you all new equipment and chemicals of any manufacturer.

1955 INVENTORY

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Porous 110D

About This Index . . .

Here's a complete index to all chemicals, materials, equipment, services and literature advertised in this issue or mentioned editorially in the Chemical & Materials, Equipment & Accessories and Technical Literature inventory sections. It is, therefore, a master index to major developments in each of these areas during the past fiscal year ending July 1955.

What the Code Means . . .

Each item has a code that is the key to its location in this Inventory Issue. The numerals show the page where you'll find the item mentioned. The letters A, B, C and a, b, c identify different items on an editorial page or within an ad.

For More Information . . .

You can get—and get fast—more information on any item in this master index by using the Reader Service postcards that follow the end of the index. Simply write in the item's code number on the card, then mail to us. Answers will come to you direct from the manufacturer. Use the cards as often as you please during the coming year.

This Section . . .

You'll find all items in the master index to this Inventory Issue arranged alphabetically and categorized, for your convenience, as follows:

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Ever use chemicals?

Of course you do — every chemical engineer does. So you'll want to take a hard look at our Inventory of New Chemicals & Materials in this issue. It's a handy rundown of major developments during the past twelve months. Nothing ever like it before (p. 77).

Add To Your INVENTORY OF INFORMATION

...You'll be glad to have on hand these technical bulletins on protective coatings for chemical environments.

Yours for the Asking

Technical information on...

- Catalyzed Epoxy protective coatings.
- Non-Catalyzed Epoxy protective coatings.
- Plasticized Neoprene coatings.
- Chlorinated (Parlon) protective coatings.
- Copolymer protective coatings.
- Chinese Wood-oil Phenolic coatings.
- Polyvinyl Acetate coatings.

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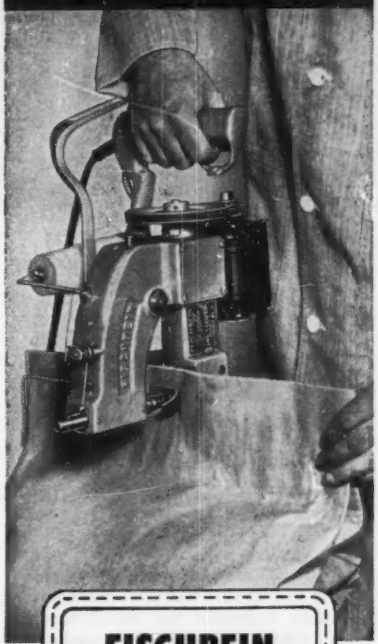

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Looking for something?

You can bank on spotting it—and fast—in this Master Index to Chemicals & Equipment. You'll find it a unique fingertip reference to major developments within the past twelve months on new chemicals, materials, equipment, services and literature (refer to these pages):

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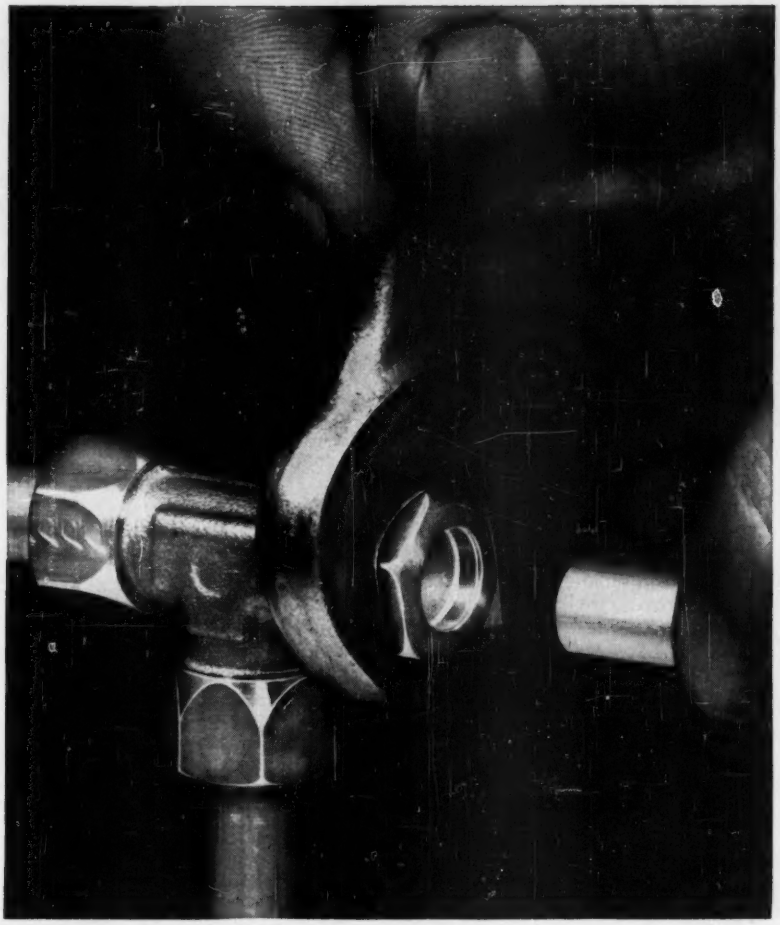

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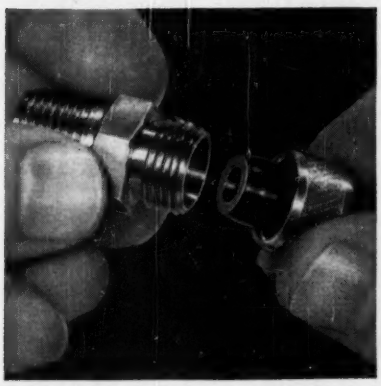

For soft plastic tubing you use knurled nut and expander insert with new *Intru-lok* body. Joints can be disconnected and reassembled. Complete details in Catalog 4324. Send for it.

Weld-lok fittings, for extreme temperatures, corrosion conditions . . . machined from high-quality steel or stainless bar stock and forgings . . . for tubing ¼" through 2" O.D.

TUBE AND HOSE FITTINGS DIVISION
The Parker Appliance Company
17325 Euclid Ave., Cleveland 12, Ohio

TUBE AND HOSE FITTINGS DIVISION
Section 413-O
The Parker Appliance Co.
17325 Euclid Avenue
Cleveland 12, Ohio

☐ Send new Parker *Intru-lok* Catalog 4324

☐ Also, Weld-lok Catalog 4370

Name _____ Title _____

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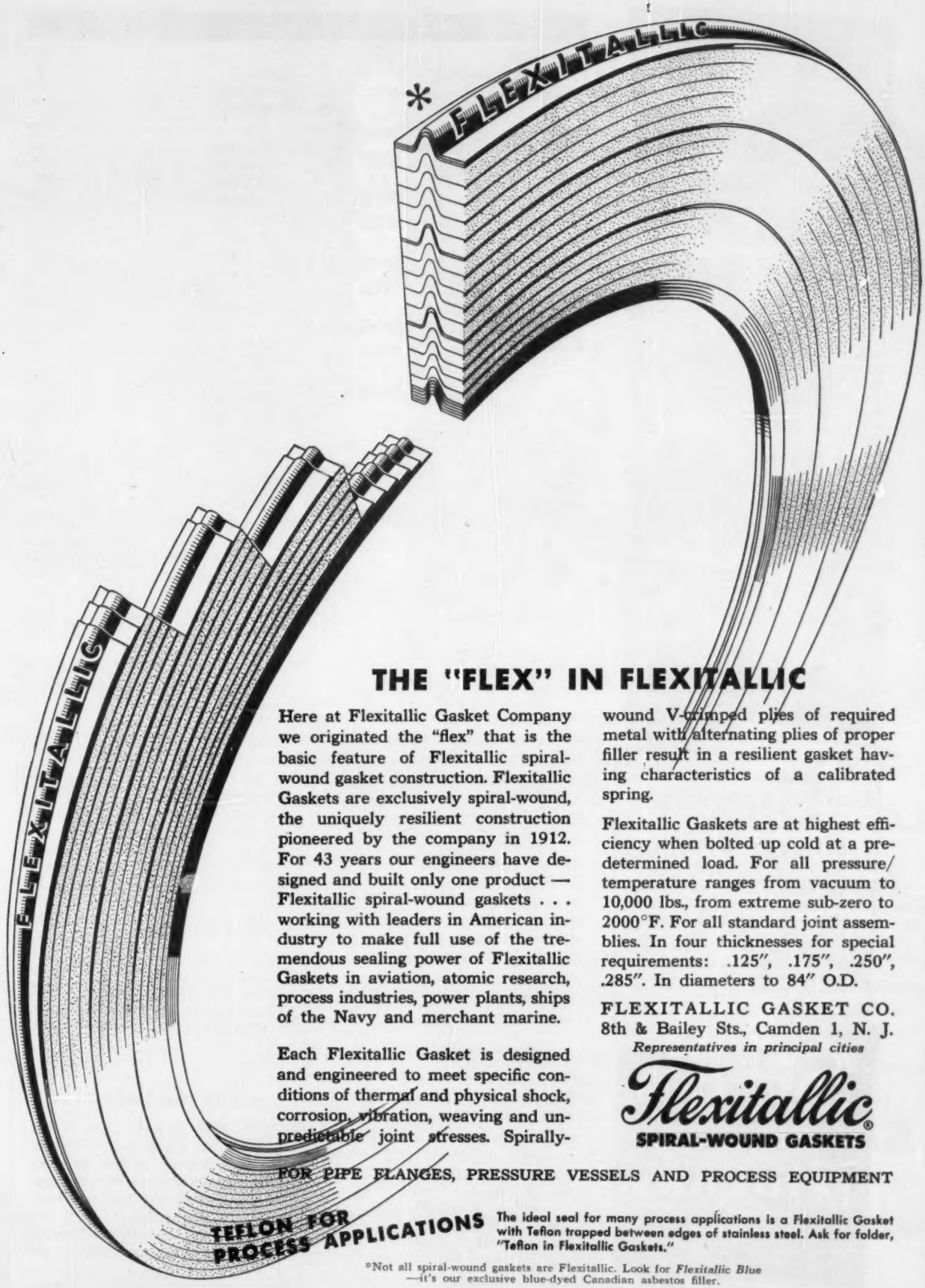

THE "FLEX" IN FLEXITALLIC

Here at Flexitallic Gasket Company we originated the "flex" that is the basic feature of Flexitallic spiral-wound gasket construction. Flexitallic Gaskets are exclusively spiral-wound, the uniquely resilient construction pioneered by the company in 1912. For 43 years our engineers have designed and built only one product — Flexitallic spiral-wound gaskets . . . working with leaders in American industry to make full use of the tremendous sealing power of Flexitallic Gaskets in aviation, atomic research, process industries, power plants, ships of the Navy and merchant marine.

Each Flexitallic Gasket is designed and engineered to meet specific conditions of thermal and physical shock, corrosion, vibration, weaving and unpredictable joint stresses. Spirally-wound V-crimped plies of required metal with alternating plies of proper filler result in a resilient gasket having characteristics of a calibrated spring.

Flexitallic Gaskets are at highest efficiency when bolted up cold at a predetermined load. For all pressure/temperature ranges from vacuum to 10,000 lbs., from extreme sub-zero to 2000°F. For all standard joint assemblies. In four thicknesses for special requirements: .125", .175", .250", .285". In diameters to 84" O.D.

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Representatives in principal cities

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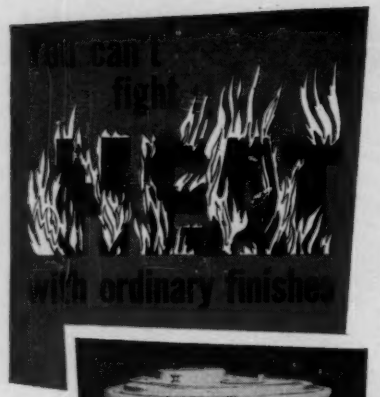
SPIRAL-WOUND GASKETS

FOR PIPE FLANGES, PRESSURE VESSELS AND PROCESS EQUIPMENT

TEFLON FOR PROCESS APPLICATIONS The ideal seal for many process applications is a Flexitallic Gasket with Teflon trapped between edges of stainless steel. Ask for folder, "Teflon in Flexitallic Gaskets."

*Not all spiral-wound gaskets are Flexitallic. Look for *Flexitallic Blue* —it's our exclusive blue-dyed Canadian asbestos filler.



Model S-25 Automatic Gas Fired "INCINOR" Mfd. by BOWSER, INC. finished in white SICON

The sparkling white finish of this home incinerator stands flash temperatures of as high as 550°F.!

It's

Sicon

Silicone Coating

SICON withstands the shock of high heat combustibles without peeling or blistering. Retains luster and beauty over long periods of time. Now used on all INCINOR models. SICON, the original silicone finish, has proved *best* for a long list of other nationally known products.

WRITE FOR BULLETIN 531

Sicon

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Waukegan, Illinois

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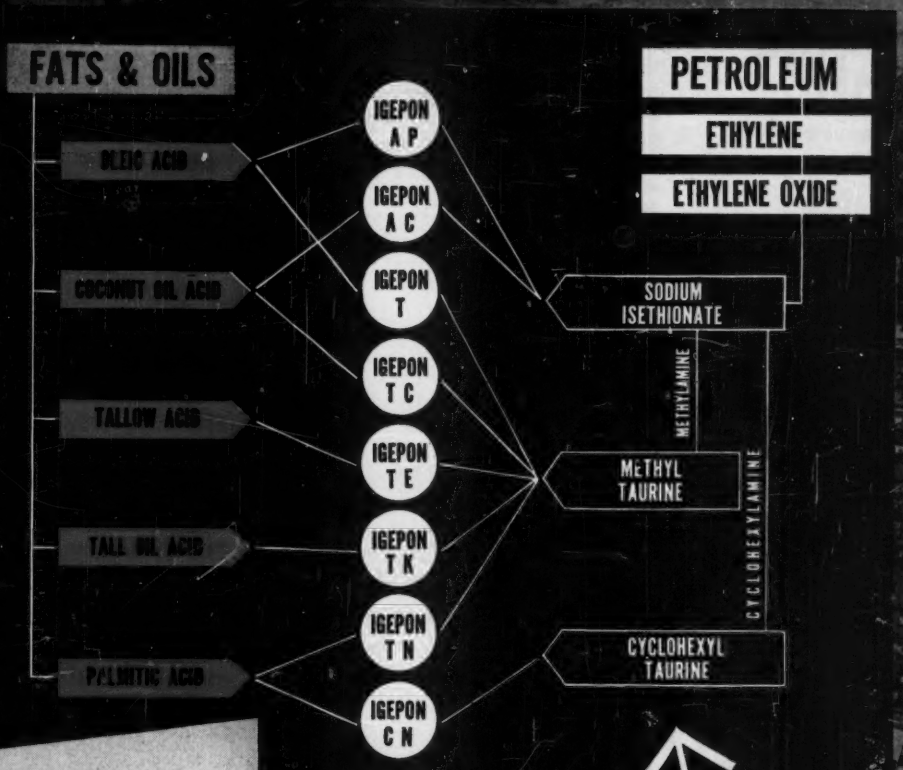

No other surfactants equal the performance and versatility of Igepons

Chemical Derivation of Igepon

There are 8 basic Igepons, each supplied in various concentrations and physical forms, and there is one to do the job for you.

Igepons are important in many industries, including cosmetics, textiles, detergents, paper, leather, agricultural and industrial chemicals, to improve a product or process. In some cases, an Igepon is selected because of its high or low foaming characteristics, its unique dispersing or emulsifying qualities, or for its excellent detergency; in others, an Igepon is selected for its wetting power, chemical stability or physical properties.

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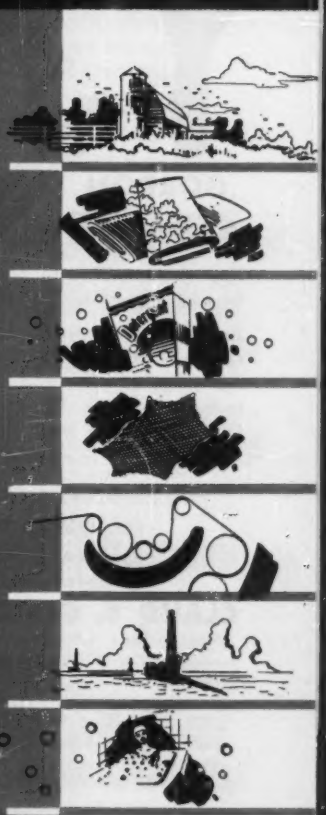
Write us today for information and samples of these unique, versatile surfactants.



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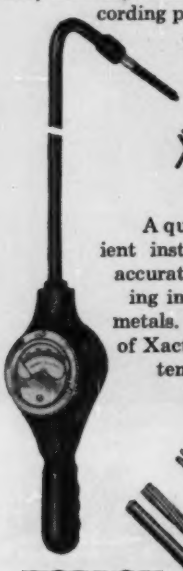
GORDON XACTLINE

Controls temperature automatically within a fraction of a degree in any heat process. A complete factory-assembled unit ready for installation anywhere. Can be used with any existing indicating or recording pyrometer controller —regardless of age.



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A quality-built, convenient instrument for quick, accurate temperature reading in molten nonferrous metals. Also, other models of Xactemp for all-around temperature checking.

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Thermocouple Wire
Thermocouple Extension Wire

Insulated in Gordon's own plant to assure consistent quality. All standard wire and insulations carried in stock for quick delivery. Other wires, in long or short runs, manufactured to specifications.

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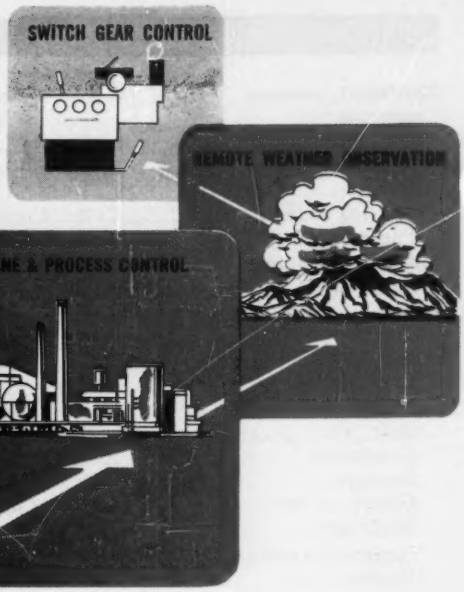
NEW STANDARDS OF ACCURACY AND DEPENDABILITY IN INDUSTRIAL REMOTE CONTROL AND TELEMETERING WITH . . .



Bendix-Pacific ELECTRO-SPAN SYSTEMS

Bendix-Pacific Electro-Span data transmission systems remotely measure liquid level, flow, pressure, temperature or shaft position, and remotely control pumps, valves, motors and similar equipment with accuracy and dependability never before attainable at such low costs.

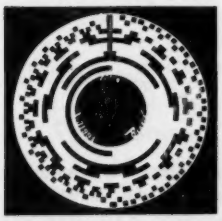
These are true digital systems, assuring consistent performance and freedom from error, over any distance. The systems can be operated over all types of communication channels.

Under the Bendix-Pacific unitized construction, these systems are comprised of standard assemblies offering maximum flexibility with low cost.

Bendix-Pacific engineers will gladly propose a system to meet your specific requirements.

TYPICAL INPUT/OUTPUT COMPONENTS

Digital Coders

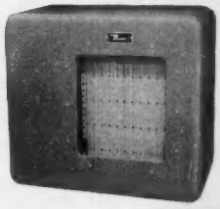


These basic electro-mechanical converters transform shaft settings into electrical code signals for long distance data transmission. They are attached to standard measuring instruments, such as flow meters and tachometers, and to control shafts.

Digital Pressure Gauges

A standard Bourdon tube pressure gauge which serves as a local pressure indicator and as a digital converter for use in transmitting pressure data electrically over long distances.

Digi-Graphic Recorders



A simple digital-to-graphic converter which directly transcribes received digital measurement data into a permanent graphic record.

Visual Indicators

including digital synchro indicator and decimal lamp register.

Please address inquiries to Department 832

Bendix
PACIFIC DIVISION
Bendix Aviation Corporation
NORTH HOLLYWOOD, CALIF

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ULTRASONICS

for rapid, accurate non-destructive

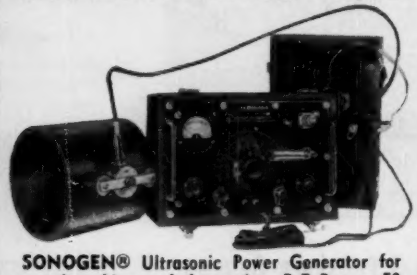
THICKNESS GAGING

from one side

and accelerated

METAL CLEANING

AUDIGAGE® Portable Ultrasonic Thickness Gage for corrosion inspection and other thickness measurements from one side of most metals, glass, and plastics, and detection of laminar flaws. Battery-operated—wide thickness range—special models for thinner materials. Accuracies within 1% to 3%. *Catalog A-2*



SONOGEN® Ultrasonic Power Generator for metal-washing and degreasing. R-F Powers 50 Watts to 25 KW. Stainless-steel-enclosed transducers with unlimited areas. *Catalog S-11*

VIDIGAGE® Automatic Thickness Gage with 21" C-R Screen for instantaneous thickness measurements between 0.005" and 2.5" and accuracies of 0.1% to 1.0%. Continuous rapid scanning of gas cylinders, tanks, furnace tubes. Detects hydrogen blisters and laminar flaws. *Catalog V-101*

COATINGAGE Portable Coating-Thickness Tester. A-C or battery operation for gaging non-magnetic coatings on magnetic bases. *Catalog C-100*

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Specializing in Ultrasonics since 1946
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Literature on Request

Can't remember?

Can't quite recall who built that new plant, who developed that new process? Well, then, take a crack at finding the answer in this issue's Inventory of New Plants & Facilities (p. 7) or Inventory of New Processes & Technology (p. 33). They're designed to help you.

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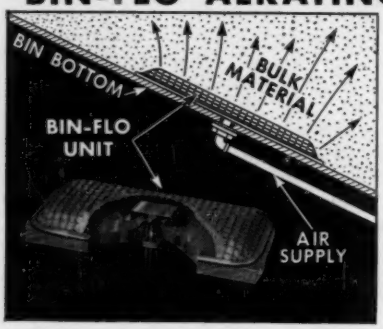

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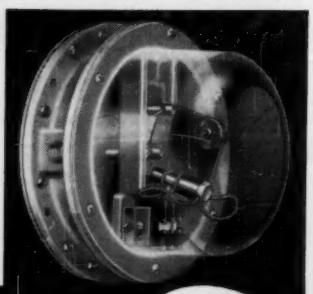

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YORK Technical Literature

1 Yorkmesh DeMisters, Entrainment Separators and Mist Eliminators

A bulletin describing the clean separation between liquid and vapor in all types of process vessels by means of Yorkmesh DeMisters. Information covers construction, types, applications, engineering data and installation instructions for improving the performance of vacuum towers, distillation equipment, gas absorbers, flash drums, knock-out drums, scrubbers, and evaporators through the use of wire mesh entrainment separators and mist eliminators.

2 Solvent Extraction

A bulletin presenting principles of operation, typical applications and engineering data on standard laboratory and pilot plant York-Scheibel multi-stage extraction units which are highly efficient and practical for both simple counter current and fractional liquid extraction.

3 "Performance of Wire Mesh DeMisters" by: Otto H. York

Reprint of paper presented before A.I.Ch.E. describing the performance of wire mesh demisters. Presents case histories from the chemical, petroleum and petrochemical industries which show how wire mesh demisters, are being used to eliminate overhead losses and increase the quality of the overhead product, while permitting operation at vapor velocities which would otherwise be excessive.

4 Bulletin 16 "Clean Separation with Yorkmesh DeMisters"

Bulletin 16 provides a detailed technical explanation with photos and schematic diagrams of the construction, types and applications of wire mesh demisters used to insure clean separation between liquids and vapors in vacuum towers, distillation equipment, gas absorbers, scrubbers, evaporators, knock-out drums and steam drums. Also included in this bulletin is a discussion of the York-Scheibel liquid-liquid Multi-Stage extraction column which is highly efficient and practical for both simple counter current and fractional liquid extraction.

5 Case Study 1001 "Entrainment Elimination Gives 31% Capacity Increase"

Detail case study showing how the installation of a stainless steel wire mesh section in an asphalt vacuum still at the Sinclair, Wyoming refinery of Sinclair Refining Company stopped entrainment and increased capacity. The account describes how the wire mesh installation was made and includes complete data on operating conditions before and after installation.

6 Case Study 1002 "Catalyst Poisoning Reduced 90%"

Case Study 1002 shows how the installation of a wire mesh demister pad in a vacuum tower supplying a substantial portion of the charge stock to several cracking units at General Petroleum Corp.'s Torrence refinery resulted in a 90% reduction in catalyst poisoning. Also included is a detailed description of tower operating conditions, the method of wiremesh installation and a table comparing metals content before and after the installation was made.

7 Case Study 1003 "Yorkmesh DeMister Eliminates Caustic Spray"

This case story contains reproductions of the initial correspondence, recommendations, order and service history exchanged through the mails by Otto H. York Co., Inc. and process engineers at a chemical plant troubled with a serious air pollution problem caused by the fine caustic spray rising from the open top of a scrubbing tower when operated at a steam rate of 3000#/hr. The correspondence reveals how a 6" demister section recommended by York completely eliminated the objectionable caustic spray.

8 Case Study 1004 "Vacuum Tower Capacity Increased 35%"

This case history shows how the installation of stainless steel wire mesh sections in two vacuum asphalt towers at Marcus Hook, Pa., refinery of Sinclair Refining Co. increased feed capacity 30-35% while maintaining gas-oil quality. Included in the account is a complete description of vacuum tower operation, a table of operating conditions and a comparison of operations before and after the demister installation. Also included is a diagram of the vacuum tower indicating the position of the wire mesh filter and the relative positions of the internal elements.

9 Case Studies 1005 and 1006 "Yorkmesh DeMisters Cut Compressor Maintenance"

Two case history accounts tell, respectively, how a monel wire mesh demister was installed in the compressor suction drum of a deasphalting unit at a Gulf Coast Refinery to reduce high maintenance costs on propane compressors; and how installation of a monel wire mesh demister pad in the compressor suction line of the catalytic cracking unit at a Midwest Refinery completely stopped the excessive maintenance which resulted from dilution of valve lubricants by liquids entrained in the gas stream.

10 "Calculation of Liquid-Liquid Extraction Processes" by: Edward G. Scheibel, Hoffmann-LaRoche, Inc.

Twelve page illustrated booklet with diagrams, charts and graphs, primarily concerned with coordinating existing information and presenting the simplest and most direct methods for the study and design of liquid-liquid extraction processes.

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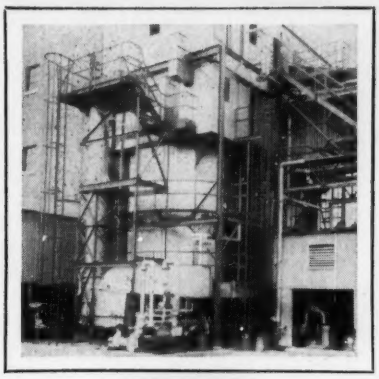

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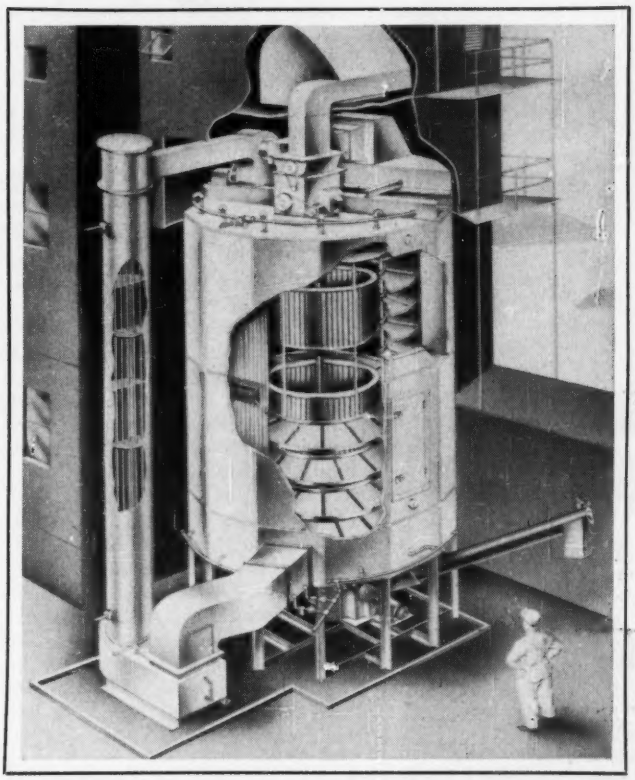
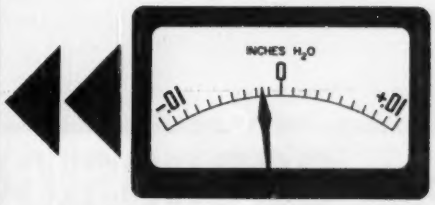


The Turbo Dryer consists of a tray rotor, centrally located turbo fans and insulated housing. The product on each tray is wiped off after the tray completes one revolution, falling on the tray below in a pile, which is leveled. From the lowest tray, the product drops onto the dryer bottom, whence it is swept into the discharge spout.



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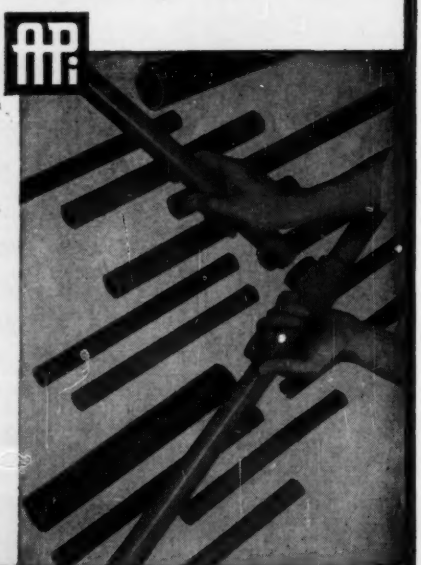

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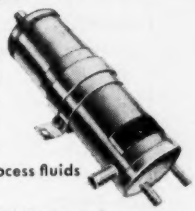

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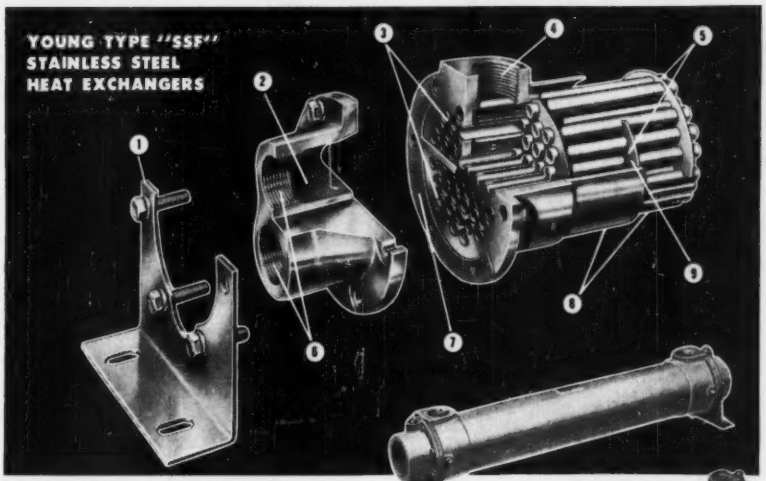

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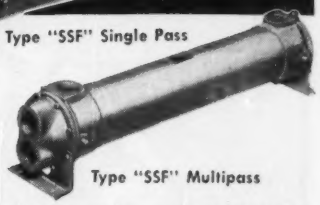

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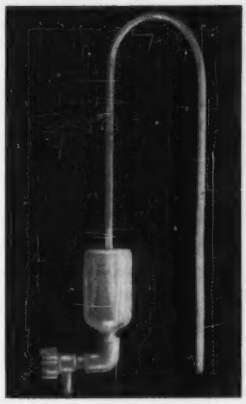

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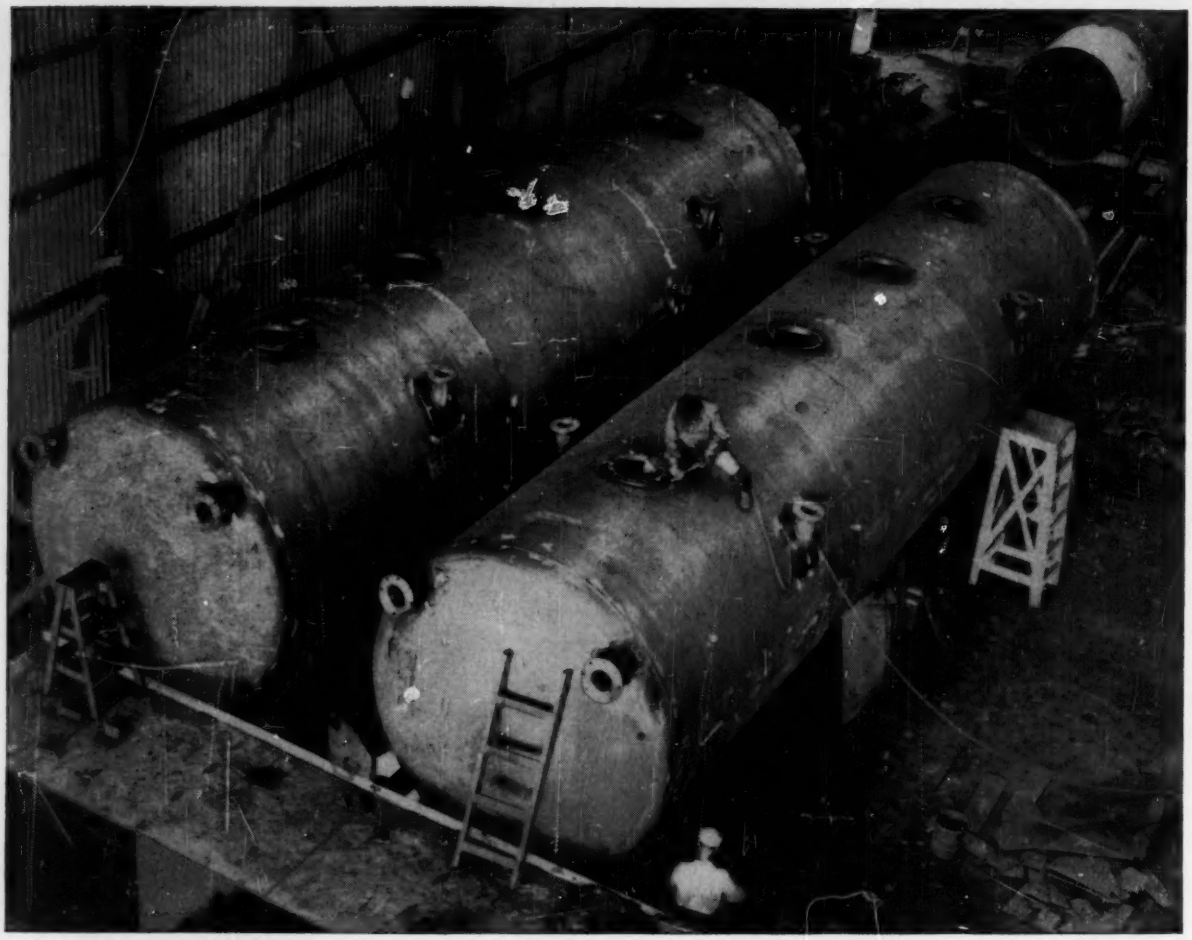

Cylindrical Steel Shapes such as these vacuum tank casings, storage tanks, petroleum and chemical processing units of large dimension . . . in alloyed or carbon steel, stainless, high nickel alloys or clad . . . are fabricated on assembly lines that typify Newport News plant methods.

Advanced techniques developed by Newport News for fabricating large metal structures used in process and allied industries not only save time but also streamline erection. Call on Newport News for pumps, valves or piping, as well as for plate fabrication, sub-assemblies or weldments. Notable for large productive capacity, the Newport News plant comprises more than 225 acres, and is served by direct rail and deep water shipping.

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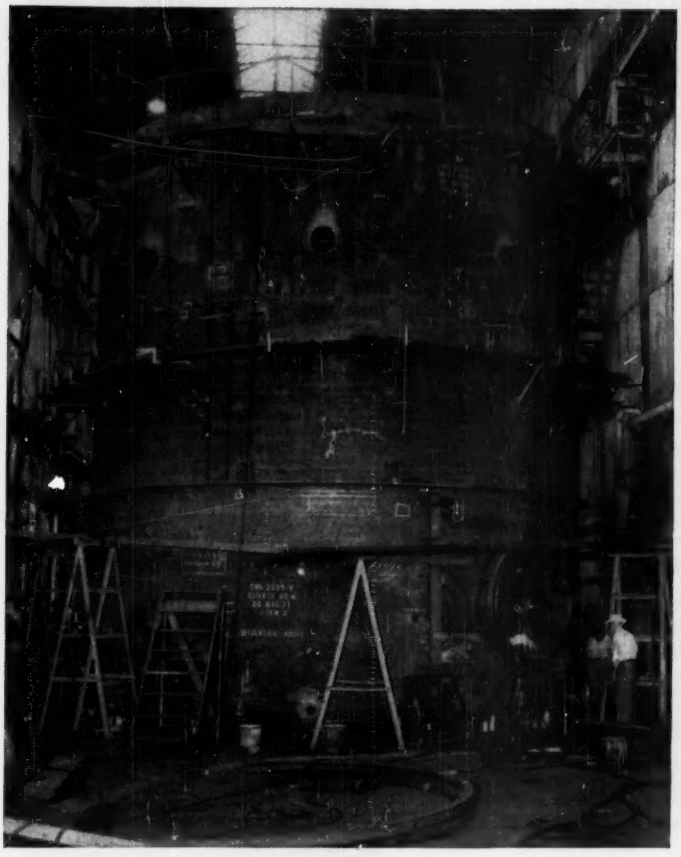
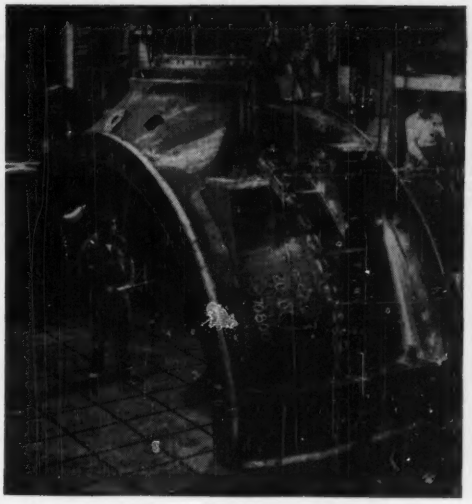


Oil Refinery Reactor in the making for overseas. Precision assembly by Newport News in the shop speeds field erection of units.



Foundries are equipped to turn out castings up to 100,000 pounds or produce commercial orders in volume. Above, a large casting for a butterfly valve casing is being machined.

Five main machine shops, manned by hundreds of craftsmen using tools that vary in size from 35 foot boring mills to small engraving machines, handle castings, forgings and weldments that flow in at a rate of thousands per week.

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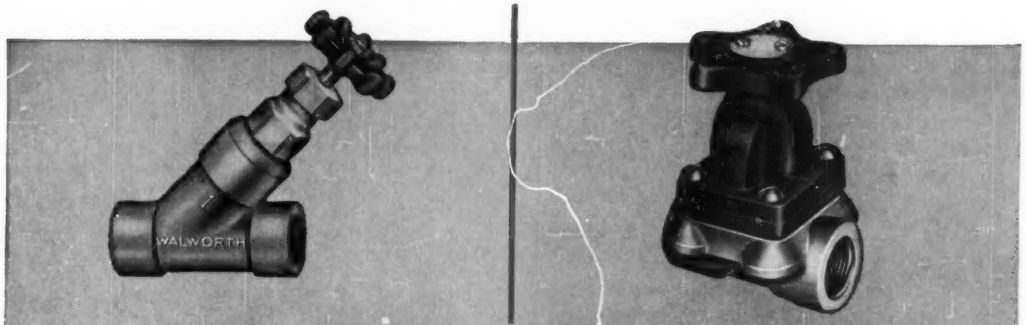
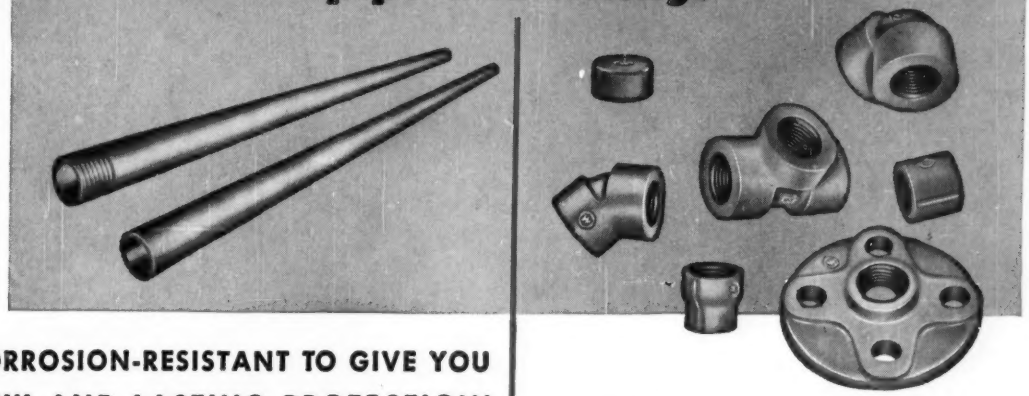


pipe and fittings



CORROSION-RESISTANT TO GIVE YOU NEW AND LASTING PROTECTION!

Walworth rigid plastic polyvinyl chloride valves, *and* fittings provide safe, trouble-free lines to handle wet and dry hydrogen gas—sulphur dioxide—dilute nitric acid—sulphuric acid—natural gas—sugar juice—milk—vinegar—tanning solutions and literally scores of other corrosive as well as noncorrosive materials in the chemical, petroleum, pulp, paper, food and other industries.

WALWORTH

valves . . . pipe fittings . . . pipe wrenches

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WALWORTH COMPANY OF CANADA, LTD.

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Walworth polyvinyl chloride valves *and* fittings are molded to the *same* rigid Walworth specifications by the *same* molder—the General American Transportation Corporation—of the *same* basic material,—Geon rigid vinyl from B. F. Goodrich Chemical. Rigid plastic pipe of the same materials and made by the same molder is also available. Consistent performance is therefore assured throughout *all*-Walworth PVC piping systems. Plastic valves, fittings, and pipe offer the following advantages:

1. **Exceptionally resistant to most salts, alkalis, and nonoxidizing acids at temperatures below 150° F.**
2. **High burst strength and impact resistance.**
3. **Nontoxic, and extreme low flammability.**
4. **Easy to install.**

Get the complete Walworth PVC product story. Write for brochure containing detailed specifications, characteristics, and application data.

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

FERMENTATION at Eli Lilly and Company, Indianapolis, produces erythromycin at high rates. Twelve 200-HP turbine-type LIGHTNIN Mixers achieve maximum gas-liquid contacting effectiveness in antibiotic broth. You can get LIGHTNINs like these, in hundreds of power-speed combinations, sizes 1 to 500 HP, for open or closed tanks.

How Eli Lilly **minimizes risk** *on large-scale mixing operation*

Mixing fluids in a big way? Then you know how vital it is to *be sure* about results, before you invest.

Eli Lilly's engineers *are* sure. After months of investigation, they selected these twelve 200-HP LIGHTNIN Mixers to speed up fermentation of erythromycin, a wide-range antibiotic, in tanks of 12,000-gallon to 15,000-gallon capacity.

The mixers have performed satisfactorily, as expected, since their installation in 1952.

No guesswork

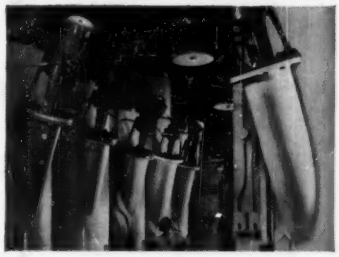
You can be sure, too. Whatever the mixing operation, with LIGHTNINs you can count on getting the *one* just-right balance of fluid flow and fluid shear that gives you the results you want, with minimum cost.

This is because MIXCO engineers are uniquely equipped to pilot-plant your operation, using standard calibrated mixing impellers with *fully-known power characteristics.*

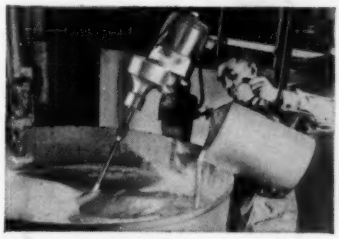
There's no guesswork. Scale-up is accurate. Every LIGHTNIN Mixer is guaranteed, unconditionally, to do the job for which it is recommended.

That's just one reason—and a powerful one—why chemical and pharmaceutical leaders, such as Eli Lilly, more than ever, are standardizing on LIGHTNIN Mixers for *every* fluid mixing operation.

Want to know, specifically, how you can be sure of optimum fluid mixing? Your LIGHTNIN Mixer representative will be glad to show you. His name is in your copy of Chemical Engineering Catalog. Why not phone him today?



USING SPECIAL TANKS? You can get LIGHTNIN Mixers to fit them. Propeller-type units like these, for open or closed tanks, come in 30 models; sizes ¼ to 3 HP.



MECHANIZE your fluid mixing, at low cost, with LIGHTNIN Portable Mixers. Get thorough, uniform mixing in any open vessel. Sizes ⅛ to 3 HP; 30 models.

Get these helpful facts on mixing: cost-cutting ideas on mixer selection; best type of vessel; installation and operating hints; full description of LIGHTNIN Mixers. Free—no obligation. Just check data you want, tear out and mail to us today with your name and company address.

- ☐ B-102 Top Entering Mixers (turbine and paddle types)
- ☐ B-103 Top Entering Mixers (propeller types)
- ☐ B-104 Side Entering Mixers
- ☐ B-107 Mixing Data Sheet
- ☐ B-108 Portable Mixers (electric and air driven)
- ☐ B-109 Condensed Catalog (complete line)
- ☐ B-111 LIGHTNIN Rotary Mechanical Seals
- ☐ B-112 Laboratory Mixers

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MIXCO fluid mixing specialists